BACK RIVER PROJECT

2020 Annual Report for

Water Licence 2AM-BRP1831

Prepared by
Sabina Gold and Silver Corp.

Prepared for
Nunavut Water Board

March 2021

BACK RIVER PROJECT
2020 2AM-BRP1831 Annual Report

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Acronyms

CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
Inspector	CIRNAC Inspector
KIA	Kitikmeot Inuit Association
The Licence	Water Licence 2BC-BRP1819
MLA	Marine Laydown Area
NIRB	Nunavut Impact Review Board
NU	Nunavut
NWB	Nunavut Water Board
The Project	Back River Project
Sabina	Sabina Gold & Silver Corp.

Executive Summary - English

Sabina Gold & Silver Corp. (Sabina) has filed its Annual Report on its activities during 2020 under Water Licence No. 2AM-BRP1831 (the Licence) issued by the Nunavut Water Board. As set out in Part B Item 2 and Schedule B of the Licence, the report includes information on the following topics:

- Information related to the dikes, dams and structures constructed to withhold water or waste;
- A summary report of Water use, Winter Ice Road activities, dewatering activities, and any updates to the Water and Load Balance results;
- Summaries of geochemical monitoring results, ore stockpile quantities, seepage and runoff monitoring, and waste disposal;
- A list of unauthorized discharges and a summary of follow-up actions taken;
- A summary of Modifications and/or major maintenance work carried out on all Water and Waste-related structures and facilities;
- Monitoring program results and interpretation;
- A summary of any progressive Closure and Reclamation work undertaken;
- An updated estimate of the current restoration liability;
- A summary of any studies requested by the Board that relate to Water use, Waste disposal or Reclamation, and a brief description of any future studies planned
- Any revisions to Management Plans, reports or manuals;
- A summary of actions taken to address concerns or deficiencies listed in the inspection reports and/or compliance reports filed by an Inspector;
- A summary of public consultation/participation, describing consultation with local organizations and residents of the nearby communities, if any were conducted;
- Any other details on Water use requested by the Board by the 1st November of the year being reported.

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ᓴᐲᓇ ᒨᓗ ᐊᒻᒪᓗ ᓴᕕᓕᕆᔨᒃᑯᑦ (ᓴᐲᓇ) ᐊᕐᕌᒍᑕᒫᖅ ᐅᓂᑉᑳᖓᓐᓂᒃ ᑐᓂᓯᓚᐅᖅᑐᑦ ᖃᓄᐃᓕᐅᕐᓂᕆᔭᖏᑦᑕ ᒥᒃᓵᓄᑦ 2020-ᒥᑦ ᒪᓕᒃᓱᒍ ᐃᒪᕐᒧᑦ ᓚᐃᓴᓐᓯ ᓈᓴᐅᑎᖓ 2AM-BRP1831 (ᓚᐃᓴᓐᓯ) ᑐᓂᔭᐅᔪᖅ ᓄᓇᕗᒻᒥ ᐃᒪᓕᕆᔨᒃᑯᑦ ᑲᑎᒪᔨᖏᑦ. ᐅᖃᖅᓯᒪᓂᖓᑐᑦ ᐃᓚᖓᓂᑦ B-ᒥᑦ ᑎᑎᖅᑲᖅ 2 ᐊᒻᒪ ᐃᓚᖓᓂ B–ᒥ ᓚᐃᓴᓐᓯᒥᑦ, ᐅᓂᑉᑳᒥᑦ ᐃᓚᐅᔪᑦ ᑐᑭᓯᐅᒪᔾᔪᑏᑦ ᐱᔾᔪᑎᖃᖅᑐᑦ ᐅᑯᓂᙵᑦ:

- ᑐᑭᓯᒋᐊᕈᑎᒃᓴᑦ ᐅᑯᓄᖓ ᓯᒥᒃᑐᖅᓯᒪᔪᑦ, ᐊᕙᓗᓕᐊᖑᓯᒪᔪᑦ ᐊᒻᒪ ᓴᓇᓯᒪᔪᑦ ᐃᒪᕐᒥᑦ ᐅᕙᓗᓐᓂᑦ ᑯᕕᖅᑕᑯᒥᑦ ᐊᑐᖅᑕᐅᔪᒃᓴᑦ;
- ᑐᑭᓯᒋᐊᕈᑎᒃᓴᑦ ᑐᓴᕈᑎᒃᓴᓕᐊᖅ ᐃᒪᕐᒥᑦ ᐊᑐᓚᐅᕐᓂᕐᒧᑦ, ᐅᑭᐅᒃᑯᑦ ᓯᑯᒃᑯᑦ ᐊᑉᖁᑎᓴᖅ ᐱᓕᕆᐊᑦ, ᐃᒪᐃᔭᐃᓂᕐᒧᑦ ᐱᓕᕆᐊᑦ, ᐊᒻᒪ ᑐᓴᕈᑎᒃᓴᑦ ᐃᒪᕐᒧᑦᑐ ᐅᓯᖃᑦᑕᕐᓂᕐᒧᑦᑐ ᐱᐊᓂᒃᑐᑦ;
- ᓇᐃᓇᖅᓯᒪᔪᑦ ᐅᔭᕋᕐᓂᐊᓂᕐᒧᑦ, ᐅᔭᕋᕐᓂᐊᒐᒃᓴᖅ ᓇᕕᑕᐅᓯᒪᔪᖅ; ᓯᒥᒃᑐᖅᓯᒪᔪᖅ ᓯᒥᒃᑐᖅᓯᒪᑦᑎᐊᕋᓗᐊᒪᖓᑦ ᖃᐅᔨᓴᖅᐸᖕᓂᖅ ᐊᒻᒪ ᖁᕕᖅᑕᖅᕕᒃ;
- ᑎᑎᕋᖅᓯᒪᔪᑦ ᐱᔪᖕᓇᖅᑎᑕᐅᓯᒪᙱᕐᓗᑎᒃ ᑯᕕᓯᓃᑦ ᐊᒻᒪᓗ ᓇᐃᓈᖅᓯᒪᔪᖅ ᖃᐅᔨᒋᐊᒃᑲᓐᓂᕐᓂᐅᔪᑦ;
- ᓇᐃᓇᖅᓯᒪᔪᑦ ᐊᓯᐊᖑᐊᖅᔭᒃᓱᒍ ᐊᒻᒪ/ᐅᕝᕙᓘᓐᓃᑦ ᐊᖏᔪᒻᒪᕆᒃ ᐱᓕᕆᐊᖅ ᑲᒪᒋᔭᐅᔭᕆᐊᖃᓚᐅᖅᑐᖅ ᐃᒪᕐᒧᑦ ᐊᒻᒪ ᑯᕕᖅᑕᖅᕕᒧᑦ ᐱᑉᓗᒍ ᐊᒻᒪ ᐃᓂᖅᑲᖅᕕᐅᔪᑦ;
- ᖃᐅᔨᒋᐊᖃᑦᑕᕐᓂᕐᒥᑦ ᖃᓄᐃᓕᖓᓕᕐᓂᖓ ᐊᒻᒪ ᑐᑭᓕᐅᖅᓯᒪᔪᑦ;
- ᓇᐃᓴᖅᓯᒪᔪᖅ ᖃᓄᐃᓕᐅᕐᓂᐅᔪᖅ ᕿᒪᐃᓂᐊᕐᓂᕐᒧᑦ ᐊᒻᒪ ᓄᓇᒥᒃ ᓴᓗᒻᒪᖅᓴᐃᓂᖅ;
- ᖃᓂᖁᓯᒪᑉᓗᒍ ᐅᒃᑐᕋᐅᓯᖅ ᒪᓐᓇᐅᔪᖅ ᐊᑭᓕᒃᓴᐅᓇᔭᖅᑐᖅ ᓱᕈᖅᓯᒪᔪᒧᑦ;
- ᓇᐃᓇᖅᓯᒪᔪᑦ ᑐᑭᓯᒋᐊᕈᑎᒃᓴᑦ ᑲᑎᒪᔨᑦ ᑐᒃᓯᕋᖅᓯᒪᔭᖏᑦ ᐃᒪᖅ ᐊᑐᖅᑕᐅᕙᓂᖓᓄᑦ; ᐊᒃᑕᑯᕈᓯᖅ ᐅᕝᕙᓘᓐᓃᑦ ᓄᓇᒥᒃ ᓴᓗᒻᒪᖅᓴᐃᓂᖅ ᓇᐃᓇᖅᓯᒪᓗᒍ ᖃᐅᔨᓴᕐᓂᐊᕐᓂᖅ ᓯᕗᓂᒃᓴᒥ ᖃᓄᐃᓕᐅᕈᑕᐅᓂᐊᕐᓂᖓ
- ᐊᓯᐊᖑᐃᓂᖅ ᐊᐅᓚᑦᑎᓂᕐᒧᑦ ᐸᕐᓇᐅᑏᑦ, ᐅᕙᓗᓐᓂᑦ ᒪᓕᒃᑕᐅᔪᒃᓴᑦ;
- ᑎᑎᕋᖅᓯᒪᔪᑦ ᖃᓄᐃᓕᐅᕐᓂᑯᑦ ᑲᒪᒋᖁᔭᐅᔪᑦ ᐱᑉᓗᒋᑦ ᐅᕙᓗᓐᓂᑦ ᐱᐊᓂᒃᓯᒪᖏᑦᑐᑦ ᖃᐅᔨᓴᐃᓂᒃᑯᑦ ᑐᓴᕈᑎᒥ ᐊᒻᒪ/ᐅᕙᓗᓐᓂᑦ ᖃᐅᔨᓴᖅᑎᐅᑉ ᐱᐊᓂᒃᓯᒪᓂᖃᖅᑕᖏᑦ;
- ᓇᐃᓈᖅᓯᒪᔪᑦ ᐃᓄᓗᒃᑖᓂᒃ ᐅᖃᖃᑎᖃᕐᓃᑦ/ᐃᓚᐅᖃᑕᐅᑎᑦᑎᓃᑦ, ᐅᖃᐅᓯᖃᕐᓗᓂ ᐅᖃᖃᑎᖃᕐᓂᐅᓚᐅᖅᑐᓂᒃ ᓄᓇᓕᖕᒥᑦ ᑲᑐᔾᔨᖃᑎᒌᓂᒃ ᐊᒻᒪᓗ ᐃᓄᖏᓐᓂᒃ ᖃᓂᑦᑐᓂᒃ ᓄᓇᓕᖕᒥᐅᓂᑦ, ᐅᖃᖃᑎᖃᓚᐅᖅᐸᑕᔭ;
- ᓱᓇᑐᐃᓐᓇᐃᑦ ᐊᓯᖏᑦ ᓇᓗᓇᐃᔭᖅᓯᒪᔪᑦ ᐃᒪᕐᒥᒃ ᐊᑐᕐᓂᕐᒧᑦ ᑐᒃᓯᕋᖅᑕᐅᔪᖅ ᑲᑎᒪᔨᓄᑦ ᓄᕕᐱᕆ 1-ᒥᑦ ᐅᑭᐅᕐᒥᑦ ᐅᓂᑉᑳᓕᐊᖑᖕᒪᑦ.

Aulapkaiyini Naittuq – Inuinnaqtun

Sabina Guulit Silverlu Kuapurisan (Sabina) tuniyat Ukiumun Tuhaqhitaut huliniqnut atuqtitlugu 2020 malikhugu Imaqmun Laisa Nappaa 2AM-BRP1831 (tamna Laisa) tuniyat tapkuat Nunavut Imaligiyit Katimayit. Taima ihuaqhihimaniagut talvani Ilanga B Titiraq 2 tamnalu Atugakhaliaq B talvani Laisami, tamna tuhaqhitaut ilalik tuhagakhat tahapkununga pityutinut:

- Tuhagakhat turangayut haputinut, hapuhiugaqnut hanahimayutlu hanaugat imaqaqviuyukhat uvaluniit iqakunut;
- Nainaqhimayuq tuhaqhitaut Immap atuqnianut, Ukiumi Hikukkuk Apqutit huliniit, imaiyainiqmun huliniit, kitutluliqak nutanguqnit tapkununga Immap Hunaqaqninutlu Ihuaqhihimani qanuritnit;
- Nainaqhimani nunaliqutit qanuritnit munarini, havikhat qaliriktitaqnit aktilangit, maqinit kuukviunitlu munarinit, tapkuatlu iqakut iqaqnit;
- Titiqat pilaqtitauhimaittut kuvititnit nainaqhimayutlu kinguagut huliniit piyauni;
- Nainaqhimayut Ihuaqhigiarutit tamnalu/uvaluniit angiyut hanayauni havariyaunit tamaitnut Immap Iqakutlu-turangayut hanahimayut havagutailu;
- Munarini havagutt qanuritnit tukiliurutailu;
- Nainaqhimayut kitutliqak pivalianit Umiktirnianut Halumaqtiqnianutlu havariyauyut;
- Nutanguqhimayut mikhautnit tatya ilitquhiraluanganut utiqtitnahuaqni akiliqtutaulat;
- Nainaqhimayut kitutliqak naunaiyautit atuquyai tapkuat Katimayit turangayut Immap atuqnianut, Iqakut iqaqni uvaluniit Halumaqtiqninut, nainaqhimayuqlu unniqtut kitunutliqak hivunikhami naunaiyaqni parnaktauyut
- Kitutliqak nutanguqni tapkuat Aulatauni Parnautit, tuhaqhitautit makpiraliugatlu;
- Nainaqhimani hulinit atuqtauyut hugiaqninut ihumaalutit uvaluniit iniqhimaittut titiqni qauyihainiqmun tuhaqhitautit tamnalu/uvaluniit malikhaqni tuhaqhitautit tuniya taphuma Qauyihaiyip;
- Nainaqhimayuq inungnut uqaqaqtigiknit/piqataunit, unnirtuqni uqaqatigikni nunalikni timiuyut nunaliuyutlu haniani nunaliuyut, atuqtauhimaniqata;
- Kitutluliqak ahii unniqtuttiaqni Immap atuqni pitquyauyut Katimayinit qangiqtitnagu Nuvipa 1 ukiunganut tuhaqhitautauyumun.

1. Introduction

This report to the Nunavut Water Board (NWB) summarizes activities and monitoring undertaken at the Sabina Gold and Silver Corp. (Sabina) Back River Project (BRP; the Project) Marine Laydown Area (MLA) and Goose Lake project areas in accordance with Part B, Item 2 of 2AM-BRP1831 (the Licence). This License was issued on September 21, 2018 and will expire on December 31, 2031. The NWB Annual Report Form can be found in Appendix A of this report.

Sabina's Back River Project is located within the West Kitikmeot region of southwestern Nunavut. It is situated approximately 400 km southwest of Cambridge Bay, 95 km southeast of the southern end of Bathurst Inlet (Kingaok), and 520 km northeast of Yellowknife, Northwest Territories. The Project is located predominantly within the Queen Maud Gulf Watershed.

The Project is comprised of two main areas; the MLA situated along the western shore of southern Bathurst Inlet and the Goose Lake Area south of the MLA where the gold deposits are located. These areas are connected seasonally by an approximately 160 km long winter ice road. The majority of annual resupply is brought in by water to the MLA and necessary materials are transferred via winter ice road to the Goose Lake property.

Project initial development works began in 2018 and have included the development of pads, all-weather access roads and an airstrip at the MLA, as well as the erection of a tent camp, bulk fuel tank, and barge off-loading area for the receipt, storage and transfer of materials necessary to support construction activities via sealift and WIR (see the 2018 and 2019 Annual Report for Water Licence 2BC-BRP1819).

In 2020, despite delays associated with COVID-19 and the establishment of protocols to minimize COVID-19 risks, Sabina was able to access the Back River Project and conduct the following activities:

- Reopening Goose Camp in June, 2020 and inspection of Goose and MLA equipment and infrastructure
- Sampling, discharge and maintenance of fuel storage areas at the MLA and Goose
- Extending the Goose all-weather airstrip to allow aircraft of different sizes to land year-round with an increased degree of success.
- Goose site road network expansion including watercourse crossings towards the Process Plant Pad.
- Initial construction of process plant pad and fuel farm pad.
- Additions to Goose site infrastructure including laydown areas, such as:
    - Crusher pad construction
    - Exploration Decline Portal Road Construction
    - Exploration Decline Portal Laydown Construction
    - Exploration Decline Portal Ramp Construction and initial bolting and screening of portal entrance
- Geotechnical drilling at Goose.
- Goose quarrying and crushing operations.
- Environmental monitoring and baseline programs including: Atmospheric, Archaeology, Water Quality, Fisheries, Wildlife, Geochemical/ Geotechnical, and Vegetation programs

Exploration activities were also concurrently undertaken under Water Licence 2BE-GOO2028.

Sabina has yet to make a full construction decision, which is dependent on the securement of Project construction financing. Sabina is actively seeking additional financing for both Exploration and Pre-Development activities for 2021.

2. Annual Report per Part B, Item 2

This section of the report has been constructed to address the requirements Part B, Item 2 and Schedule B of the Licence. For ease of comparison, each subheading within this section corresponds directly with the identically numbered subheading of Schedule B of Water Licence 2AM-BRP1831.

CONSTRUCTION

2.1 FOR THE DIKES, DAMS AND STRUCTURES CONSTRUCTED TO WITHHOLD WATER OR WASTE

At this time, no dikes, dams or structures to withhold water or waste have been commissioned under this Licence.

WATER

2.2 MONTHLY AND ANNUAL VOLUME OF FRESH WATER OBTAINED FROM ALL SOURCES

No water was used for the WIR this year. In total 5 m3 of water was used at the MLA in 2020, all in the month of August from MLA Lake 3. Water related to operation of the Goose Exploration Camp is reported in the 2BE-GOO2028 annual report.

2.3 SUMMARY OF INTERCONNECTION WINTER ICE ROAD PLANS IMPLEMENTED IN ACCORDANCE WITH PART E, ITEM 13

No WIR was constructed this year.

2.4 SUMMARY OF DEWATERING PLANS IMPLEMENTED IN ACCORDANCE WITH PART E, ITEM 14

No dewatering activities have occurred to date. A dewatering Plan will be provided to the NWB 60 days prior to initiation of dewatering in accordance with Part E Item 14 of the Licence.

2.5 SUMMARY UPDATE TO THE WATER AND LOAD BALANCE RESULTS, IF ANY

The Water and Load balance was updated in 2020 and was provided to the NWB as Appendix B of the Water Management Plan of the Type A amendment application submitted October 13, 2020. This update to the Water and Load Balance Report (SRK 2020) was made to reflect the proposed modifications to the Project and reflects the current mine plan which includes three open pits, one underground mine, three waste rock storage areas, two tailings deposition locations, an underground mining pad, an ore stockpile, camp, process plant, airstrip and roads. This report is currently under review by the NWB as part of the Licence amendment process.

WASTE

2.6 GEOCHEMICAL MONITORING RESULTS

a. Operational acid/base accounting and associated test work used for Waste Rock designation (PAG and NPAG rock);

No waste rock has been generated to date.

b. As-built volumes of Waste Rock used in construction and placed in the Waste Rock Storage Areas with estimated balance of acid generation to acid neutralization capacity in a given sample as well as metal toxicity;

No waste rock has been generated to date.

c. All monitoring data with respect to geochemical analyses on site and related to roads and quarries;

Four chip samples and one overburden sample were collected from the Back River Airstrip Quarry in October 2020. The ML/ARD potential of the samples were assessed using total sulphur and total carbon content. The analyses were performed at Bureau Veritas Labs in Burnaby, BC.

The acid potential (AP) for each sample was calculated using total sulphur concentration according to the following equation:

$$\text{Total Sulphur (wt. \%)} * 31.25 = \text{Acid Potential (kg } CaCO_3/t)$$

The use of total sulphur to determine the AP assumes that all the sulphur is present as pyrite and can generate acid. The neutralization potential was calculated using the total carbon concentration according to the following equation:

$$\text{Total Carbon (wt. \%)} * 83.34 = \text{Neutralization Potential (kg } CaCO_3/t)$$

The use of total carbon to determine the NP assumes that all carbon is present as calcite and can neutralize acid. This determination of NP can be considered conservative as it discounts the contribution from silicate minerals.

Table 2.6-1 presents the analytical results, AP, NP and neutralization potential ratio (NPR) for the five samples. Using the NPR, three of the chip samples were classified as PAG, and the overburden was non-potentially acid generating (NPAG). The fourth chip sample (BV63) was classified as low sulphur based on having a total sulphur concentration less than 0.16 wt. %.

The available data indicate that the materials represented by the overburden and BV63 sample have low ML/ARD potential and are suitable for use in construction based on the material classification criteria outlined in the Quarry Management Plan. The material represented by chip samples BD17, BH23, and CB60 is potentially acid generating and are not suitable for use in construction.

Table 2.6-1. Geochemical Characterization Results

Sample ID	Total Carbon (wt. %)	Total Sulphur (wt. %)	NP (kg $CaCO_3$/t)	AP (kg $CaCO_3$/t)	NPR (NP/AP)	Classification
BD17	0.06	0.27	5.0	8.4	0.59	PAG
BH23	0.07	0.24	5.8	7.5	0.78	PAG
BV63	0.03	0.10	2.5	3.1	0.80	Low Sulphur
CB60	0.17	0.21	14.2	6.6	2.2	PAG
OVERBURDEN	1.59	0.03	132	0.9	141	NPAG

d. Any Leaching observations and tests collected on pit slope and dike exposure;

This infrastructure has not yet been constructed.

e. Any geochemical outcomes or observations that could imply or lead to environmental impact.

Geochemical outcomes and observations were within those outlined during Project assessment and permitting as being anticipated.

2.7 VOLUMES OF ORE STOCKPILED.

No ore has been mined at the Project to date.

2.8 SUMMARY OF QUANTITIES AND ANALYSIS OF SEEPAGE AND RUNOFF MONITORING FROM THE TAILINGS STORAGE FACILITY, WASTE ROCK STORAGE AREAS, LANDFILL(S) AND ASSOCIATED DIKES/BERMS.

The Tailings Storage Facility, Waste Rock Storage Areas, Landfill and associated dikes/berms have not yet been constructed.

2.9 A SUMMARY REPORT OF ALL GENERAL WASTE DISPOSAL ACTIVITIES INCLUDING MONTHLY AND ANNUAL QUANTITIES IN CUBIC METRES OF WASTE GENERATED AND LOCATION OF DISPOSAL.

Information on waste disposal is provided in Appendix C and includes quantities and types of wastes incinerated (Appendix C Table 1) as well as wastes backhauled to KBL Environmental in Yellowknife (Appendix C Table 2). Wastes backhauled included incinerator ash as well as wastes from the Goose and George Properties. KBL Environmental provides waste management services, including transfer of Project wastes to approved disposal facilities outside of Nunavut. No waste is currently landfilled on site.

2.10 REPORTING OF INCINERATOR TEST RESULTS INCLUDING THE MATERIALS BURNED AND THE EFFICIENCY OF THE INCINERATOR IN RELATION TO EFFECTS ON WATER AND THE POTENTIAL DEPOSIT OF WASTE INTO WATER.

No incinerator testing was conducted in 2020. Materials burned are itemized in Appendix C Table 1 of this report.

SPILLS

2.11 A LIST AND DESCRIPTION OF ALL UNAUTHORIZED DISCHARGES INCLUDING VOLUMES, SPILL REPORT LINE IDENTIFICATION NUMBER AND SUMMARIES OF FOLLOW-UP ACTION TAKEN

All spills, regardless of size are recorded for adaptive management purposes at the Back River Project.

No spills requiring reporting to the NT-NU 24 Hour Spill Report Line occurred in 2020.

MODIFICATIONS

2.12 A SUMMARY OF MODIFICATIONS AND/OR MAJOR MAINTENANCE WORK CARRIED OUT ON ALL WATER AND WASTE-RELATED STRUCTURES AND FACILITIES.

No modifications or major maintenance work was carried out in 2020.

However, Sabina submitted an application for amendment to Type A Water Licence 2AM-BRP1831 on October 13, 2020[1]. This application is still under evaluation by the NWB and all materials related to this application for amendment can be found on the NWB public registry.

This application had previously been reviewed by the Nunavut Planning Commission, who confirmed on 9 June 2020 that the application for modification remained outside the area of an applicable regional land use plan[2], and subsequently forwarded the 2020 Modification Package to Nunavut Impact Review Board (NIRB) for assessment. On August 11, 2020, the NIRB determined that the Back River Project 2020 Modification Package does not constitute a significant modification that requires further assessment by the NIRB[3]. In addition, the NIRB concluded that the Package submitted is consistent with the activities identified by Sabina under the NIRB Project Certificate No. 007 (NIRB File No. 12MN036).

MONITORING

2.13 THE RESULTS AND INTERPRETATION OF THE MONITORING PROGRAM IN ACCORDANCE WITH PART I AND SCHEDULE I.

A monitoring summary outlining activity related to each monitoring station indicated in Part I and Schedule I of the Licence is provided in Appendix D. Approximately 16 m^3 of water was discharged from the temporary MLA berms in 2020 and 10 m^3 of water was discharged from the Goose fuel berms. Berm water quality results and discharge criteria are summarized in Table 2.13-1 and discharge locations and quantities are summarized in Table 2.13-2. All water was discharged >31 m from any waterbodies and in a manner so as to prevent erosion and direct connectivity with waterbodies.

Table 2.13-1 Berm Discharge Water Quality Results

	Benzene (mg/L)	Ethylbenzene (mg/L)	Toluene (mg/L)	Lead (mg/L)	Oil and Grease (mg/L)	TSS (mg/L)	pH
Max Avg. Concentration	**0.37**	**0.09**	**0.002**	**0.1**	**5 and no visible sheen**	**15**	**Between 6.0 and 9.5**
MLA Fuel 4	<0.00050	<0.00050	<0.00045	<0.000050	<5.0 no	3.3	6.22
MLA Fuel 3	<0.00050	<0.00050	<0.00045	0.000069	<5.0 no	<3.0	(5.06) 7.1*
MLA Fuel 2	<0.00050	<0.00068	<0.00050	0.000513	<5.0 no	<3.0	(5.78) 7.5*
MLA Fuel 1	<0.00050	<0.00050	<0.00045	0.000059	<5.0 no	<3.0	(5.42) 6.8*
Goose Fuel 2 – Fuel Storage Berm	<0.00050	<0.00050	<0.00045	0.000126	<5.0 no	<3.0	7.0
Goose Fuel 1 – Fuel Station Berm	<0.00050	<0.00050	<0.00045	0.000090	<5.0 no	3.7	8.04

[1] Sabina's letter, "Amendment Type A Water Licence Application for Sabina Gold & Silver Corp. Back River Project (NWB File No. 2AM-BRP1831)" (M. Pickard to R. Dwyer, dated October 13, 2020)
[2] NPC's letter, "NPC file # 149378 [Back River 2020 Modification Package]" (P. Scholz to M. Pickard et. al, dated June 9, 2020)
[3] NIRB's letter, "Direction Regarding the "Back River Project 2020 Modification Package" submitted by Sabina Gold & Silver Corp. in relation to the Back River Project" (K. Kaluraq to M. Pickard, dated August 11, 2020, NIRB File No. 12MN036)

**Initial pH readings, in parentheses, were low. In consultation with the Inspector, Sabina raised pH and re-tested pH prior to discharge to confirm water met discharge criteria.*

Table 2.13-2 Discharge Locations and Quantities

Berm	Discharge Location	Discharge Quantity (m3)
MLA Berm 1, 2, 3 & 4	UTM NAD83 ZONE 13 N; N 7394413 E 381001	16
Goose Fuel 1 & 2	UTM NAD83 ZONE 13 N; N 7394413 E 381001	10
Total		**16**

Personnel were on site at the Goose Property in March and from June to December of 2020. No site seepage or runoff with the potential to enter a freshwater waterbody was observed.

5 m^3 of greywater was discharged at the MLA in 2020. No water was available for sampling downslope of the greywater discharge location. Water use and waste deposition related to operation of the Goose Exploration camp is reported in the 2BE-GOO2028 annual report.

Full laboratory results of all water quality samples collected are provided in Appendix B.

2.14 THE RESULTS OF MONITORING RELATED TO THE GENERAL AND AQUATIC EFFECTS MONITORING PROGRAM IN ACCORDANCE WITH PART I ITEM 1.

Aquatic effects monitoring has not yet commenced at the Back River Project. This monitoring will be initiated once the Construction phase commences at the Goose Property. On Sept 21, 2020, Sabina provided the NWB with a Back River Project Aquatic Baseline Synthesis Report (Golder 2019). This report includes updated 2017-2018 baseline date collection that takes into account seasonal variation. This report can be found on the NWB public registry.

CLOSURE

2.15 A SUMMARY OF ANY PROGRESSIVE CLOSURE AND RECLAMATION WORK UNDERTAKEN, INCLUDING PHOTOGRAPHIC RECORDS OF SITE CONDITIONS BEFORE AND AFTER COMPLETION OF OPERATIONS, AND AN OUTLINE OF ANY WORK ANTICIPATED FOR THE NEXT YEAR, INCLUDING ANY CHANGES TO IMPLEMENTATION AND SCHEDULING

No progressive reclamation activities have been undertaken to date. Sabina anticipates that these activities will commence once areas are determined to be no longer in use and subject to further impact. Photographic records of pre-construction site conditions are maintained by Sabina for comparison with photos to be taken after completion of Operations.

2.16 AN UPDATED ESTIMATE OF THE CURRENT RECLAMATION LIABILITY BASED ON PROJECT DEVELOPMENT MONITORING, RESULTS OF RESTORATION RESEARCH AND ANY CHANGES OR MODIFICATIONS TO THE APPURTENANT UNDERTAKING

As part of the amendment process, Sabina has provided a revised closure cost estimate reflective of the amended Project to the NWB. This cost estimate as well as the proposed Project changes and modifications are currently under review and can be found on the NWBs website. It is anticipated that the Projects reclamation liability will be updated with the issuance of the amended licence in reflection of the amendment application.

PLANS/REPORTS/STUDIES

2.17 A SUMMARY OF ANY STUDIES REQUESTED BY THE BOARD THAT RELATE TO WATER USE, WASTE DISPOSAL OR RECLAMATION, AND A BRIEF DESCRIPTION OF ANY FUTURE STUDIES PLANNED

No studies have been requested by the Board and no studies have been identified as necessary for 2021.

2.18 WHERE APPLICABLE, REVISIONS AS ADDENDA, WITH AN INDICATION OF WHERE CHANGES HAVE BEEN MADE, FOR PLANS, REPORTS, AND MANUALS

The following management and monitoring plans applicable to the Licence were updated in 2020 and have been provided to the NWB for review and approval. These include:

- Waste Rock Management Plan
- Tailings Management Plan
- Borrow Pits and Quarry Management Plan
- Water Management Plan
- Incineration Management Plan

All of these plans are available on the NWB public registry.

Sabina has also recently updated the Back River Project Road Management Plan, and this plan is included in Appendix E of this report.

2.19 AN EXECUTIVE SUMMARY IN ENGLISH, INUKTITUT, AND INUINNAQTUN OF ALL PLANS, REPORTS, OR STUDIES CONDUCTED UNDER THIS LICENCE.

An executive summary of this report is provided in both English and Inuktitut at the start of this report. Translated executive summaries are also included in each of the plans submitted under this Licence.

GENERAL

2.20 A SUMMARY OF ACTIONS TAKEN TO ADDRESS CONCERNS OR DEFICIENCIES LISTED IN THE INSPECTION REPORTS AND/OR COMPLIANCE REPORTS FILED BY AN INSPECTOR

No inspections were conducted under this Licence in 2020. A site update with photo logs and commentary on site conditions was provided to the KIA and NIRB on September 14, 2020[4]. A copy of this letter is provided as Appendix F of this Annual report.

On June 2, 2020, Crown-Indigenous Relations and Northern Affairs (CIRNA) submitted to the Nunavut Water Board (NWB) two comments concerning Sabina's 2019 Annual Report for Water Licence 2AM-BRP1831. Sabina provided response to those comments on June 16th, 2020. In summary, CIRNA requested that Winter Ice Road water usage be reported in future as a quantity per kilometer of road to better allow comparison with the Water Licence water usage allotment of 675 m3/km. Sabina confirmed the 2019 WIR water usage equated to 333 m3/km. No WIR was constructed over the winter of 2019/2020.

[4] Sabina's letter, "Back River Project 2020 Site Update" (Sabina Gold & Silver Corp. to J. Roesch (KIA), K. Morrison (NWB), O. Pasalic (CIRNAC) and R. Dwyer (NWB), dated September 14, 2020)

CIRNA also sought confirmation that Sabina had reviewed the Back River Project QA/QC Plan (the Plan) and, if any changes were necessary, requested that this Plan be submitted to an Accredited Laboratory for approval. Sabina has reviewed and updated this Plan and provided it to an ALS Environmental, a CALA Accredited Laboratory, for review and acceptance. The revised Back River Project QA/QC Plan is attached as Appendix G of this report and includes a letter of plan acceptance from ALS.

OTHER

2.21 A SUMMARY OF PUBLIC CONSULTATION AND PARTICIPATION WITH LOCAL ORGANIZATIONS AND THE RESIDENTS OF THE NEARBY COMMUNITIES, INCLUDING A SCHEDULE OF UPCOMING COMMUNITY EVENTS AND INFORMATION SESSIONS

Sabina's Back River Project engagement record is provided in Appendix H.

2.22 ANY OTHER DETAILS ON WATER USE OR WASTE DISPOSAL REQUESTED BY THE BOARD BY NOVEMBER 1ST OF THE YEAR BEING REPORTED.

No additional sampling or details on water use or waste disposal activities related to this Licence was requested by the Board or Inspector in 2020.

Appendix A NWB Annual Report Form

NWB Annual Report **Year being reported:** Select 2020

License No: 2AM-BRP1831 **Issued Date:** September 21, 2018
Expiry Date: December 31, 2031

Project Name: BACK RIVER PROJECT

Licensee: SABINA GOLD AND SILVER CORP

Mailing Address: #1800-555 Burrard St, Box 220, Vancouver, BC, V7X 1M9

Name of Company filing Annual Report (if different from Name of Licensee please clarify relationship between the two entities, if applicable):

SABINA GOLD AND SILVER CORP

General Background Information on the Project (*optional):

See Section 1 of attached report

Licence Requirements: the licensee must provide the following information in accodance with

Part B Select **2**

A summary report of water use and waste disposal activities, including, but not limited to: methods of obtaining water; sewage and greywater management; drill waste management; solid and hazardous waste management.

Water Source(s): Goose Lake, MLA Pond S1, MLA Pond S2, MLA Lake 3

Water Quantity:

Allowed:		Actually Used:
578,000 cu.m.	Annually	5 cu.m.
1,400,000 cu.m.	Annually for dewatering	0 cu.m.
675 cu.m./km	for the WIR	0 cu.m./km WIR

Waste Management and/or Disposal

- [x] Solid Waste Disposal
- [x] Sewage
- [ ] Drill Waste
- [x] Greywater
- [x] Hazardous
- [ ] Other:

Additional Details:

See Section 2.9 of this report for wastes disposed of in 2020.

A list of unauthorized discharges and a summary of follow-up actions taken.

Spill No.: (as reported to the Spill Hot-line)
Date of Spill:
Date of Notification to an Inspector:
Additional Details: (impacts to water, mitigation measures, short/long term monitoring, etc)

Please see Section 2.11 of Annual Report.

Please see Section 2.11 of Annual Report.

Revisions to the Spill Contingency Plan

No Spill Contingency Plan (SCP) submitted or approved

Additional Details:

No revisions to the SCP were made in 2020

Revisions to the Abandonment and Restoration Plan

Other: (see additional details)

Additional Details:

An updated Interim Closure and Reclamation Plan is currently underway as part of the Amendment of this Licence.

Progressive Reclamation Work Undertaken

Additional Details (i.e., work completed and future works proposed)

Please see Section 2.15 of Annual Report.

Results of the Monitoring Program including:

The GPS Co-ordinates (in degrees, minutes and seconds of latitude and longitude) of each location where sources of water are utilized;

Details attached

Additional Details:

Please see Section 2.2 of Annual Report.

The GPS Co-ordinates (in degrees, minutes and seconds of latitude and longitude) of each location where wastes associated with the licence are deposited;

Details attached

Additional Details:

See Section 2.9 of this report for wastes disposed of in 2020.
Waste water discharge infomation (including discharge locations) are provided in Section 2.13 of the Annual Report.

Results of any additional sampling and/or analysis that was requested by an Inspector

No additional sampling requested by an Inspector or the Board

Additional Details: (date of request, analysis of results, data attached, etc)

See Section 2.20 of this report

Any other details on water use or waste disposal requested by the Board by November 1 of the year being reported.

No additional sampling requested by an Inspector or the Board

Additional Details: (Attached or provided below)

See Section 2.22 of this report

Any responses or follow-up actions on inspection/compliance reports

Inspection Report received by the Licensee (Date):

Additional Details: (Dates of Report, Follow-up by the Licensee)

Please see Section 2.20 of Annual Report.

Any additional comments or information for the Board to consider

Date Submitted:	March 02 2021	
Submitted/Prepared by:	Merle Keefe/Katsky Venter	
Contact Information:	**Tel:**	
	Fax:	
	email:	mkeefe@sabinagoldsilver.com

Appendix B Water Quality Analytical Results

SABINA GOLD & SILVER CORP.
ATTN: Merle Keefe
Suite 1800 - 555 Burrard St.
Box 220
Vancouver BC V7X 1M7

Date Received: 03-JUL-20
Report Date: 13-JUL-20 17:06 (MT)
Version: FINAL

Client Phone: 604-240-6619

Certificate of Analysis

Lab Work Order #: L2469529

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc:

Oliver Gregg
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2469529-1				
	Description	SURFACE WATE				
	Sampled Date	02-JUL-20				
	Sampled Time	08:00				
	Client ID	GOOSE FUEL 2 - FUEL STORAGE BERM				
Grouping	**Analyte**					
WATER						
Physical Tests	pH (pH)	7.00				
	Total Suspended Solids (mg/L)	<3.0				
Total Metals	Lead (Pb)-Total (mg/L)	0.000126				
Aggregate Organics	Oil and Grease (mg/L)	<5.0				
Volatile Organic Compounds	Benzene (mg/L)	<0.00050				
	Ethylbenzene (mg/L)	<0.00050				
	Methyl t-butyl ether (MTBE) (mg/L)	<0.00050				
	Styrene (mg/L)	<0.00050				
	Toluene (mg/L)	<0.00045				
	ortho-Xylene (mg/L)	<0.00050				
	meta- & para-Xylene (mg/L)	<0.00050				

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
EC-SCREEN-VA	Water	Conductivity Screen (Internal Use Only)	APHA 2510
Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
OGG-SF-VA	Water	Oil & Grease by Gravimetric	BCMOE (2010), EPA1664A
The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.			
PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value
This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode It is recommended that this analysis be conducted in the field.			
TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.			
VOC7-HSMS-VA	Water	BTEX/MTBE/Styrene by Headspace GCMS	EPA 5021A/8260C
The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: SABINA GOLD & SILVER CORP.
Suite 1800 - 555 Burrard St. Box 220
Vancouver BC V7X 1M7
Contact: Merle Keefe

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	**Water**							
Batch R5148296								
WG3360015-2 LCS								
Lead (Pb)-Total			102.9		%		80-120	11-JUL-20
WG3360015-1 MB								
Lead (Pb)-Total			<0.000050		mg/L		0.00005	11-JUL-20
OGG-SF-VA	**Water**							
Batch R5148778								
WG3360252-2 LCS								
Oil and Grease			101.0		%		70-130	10-JUL-20
WG3360252-1 MB								
Oil and Grease			<5.0		mg/L		5	10-JUL-20
PH-PCT-VA	**Water**							
Batch R5146356								
WG3357683-2 CRM		**VA-PH7-BUF**						
pH			6.99		pH		6.9-7.1	08-JUL-20
TSS-VA	**Water**							
Batch R5147589								
WG3358593-2 LCS								
Total Suspended Solids			91.5		%		85-115	09-JUL-20
WG3358593-1 MB								
Total Suspended Solids			<3.0		mg/L		3	09-JUL-20
VOC7-HSMS-VA	**Water**							
Batch R5139097								
WG3358394-2 LCS								
Benzene			116.9		%		70-130	09-JUL-20
Ethylbenzene			115.3		%		70-130	09-JUL-20
Methyl t-butyl ether (MTBE)			114.2		%		70-130	09-JUL-20
Styrene			107.0		%		70-130	09-JUL-20
Toluene			119.7		%		70-130	09-JUL-20
meta- & para-Xylene			113.0		%		70-130	09-JUL-20
ortho-Xylene			111.0		%		70-130	09-JUL-20
WG3358394-1 MB								
Benzene			<0.00050		mg/L		0.0005	09-JUL-20
Ethylbenzene			<0.00050		mg/L		0.0005	09-JUL-20
Methyl t-butyl ether (MTBE)			<0.00050		mg/L		0.0005	09-JUL-20
Styrene			<0.00050		mg/L		0.0005	09-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC7-HSMS-VA	**Water**							
Batch R5139097								
WG3358394-1 MB								
Toluene			<0.00045		mg/L		0.00045	09-JUL-20
meta- & para-Xylene			<0.00050		mg/L		0.0005	09-JUL-20
ortho-Xylene			<0.00050		mg/L		0.0005	09-JUL-20

Quality Control Report

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH by Meter (Automated)							
	1	02-JUL-20 08:00	08-JUL-20 15:16	0.25	151	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2469529 were received on 03-JUL-20 10:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # _____

Page 1 of 1

Report To:		**Report Format / Distribution**	**Service Requested** (Rush for routine analysis subject to availability)
Company:	Sabina Gold and Silver Corp		**Regular**
Contact:	Merle Keefe		
Address:	1800-555 Burrard St	Email 1: mkeefe@sabinagoldsilver.com	
	Vancouver, BC, V7X 1M7	Email 2:	
Phone:	604-240-6619 Fax:	Email 3:	**Analysis Request**
Invoice To	Same as Report ?	**Client / Project Information**	Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?		Job #:	
Company:	Sabina Gold and Silver Corp	PO / AFE:	
Contact:	Accounts payable	LSD:	
Address:			
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)	L2469529	**ALS Contact:**	Sampler: BRUCE BARNES

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	pH	TSS	Oil & Grease (mg/L)	BTEX	Lead	Number of Containers
	Goose Fuel 2			Surface Water	X	X	X	x	x	6
	Fuel Storeage Berm	2-7-20	8 AM							

L2469529-COFC

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
			MA	July 3/20	10:00	5.3 °C				

SABINA GOLD & SILVER CORP.
ATTN: Merle Keefe
Suite 1800 - 555 Burrard St.
Box 220
Vancouver BC V7X 1M7

Date Received: 03-JUL-20
Report Date: 13-JUL-20 17:09 (MT)
Version: FINAL

Client Phone: 604-240-6619

Certificate of Analysis

Lab Work Order #: L2469538

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc:

Oliver Gregg
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2469538-1				
	Description	WATER				
	Sampled Date	02-JUL-20				
	Sampled Time	08:00				
	Client ID	GOOSE FUEL 1 - FUEL STATION BERM				
Grouping	**Analyte**					
WATER						
Physical Tests	pH (pH)	8.04				
	Total Suspended Solids (mg/L)	3.7				
Total Metals	Lead (Pb)-Total (mg/L)	0.000090				
Aggregate Organics	Oil and Grease (mg/L)	<5.0				
Volatile Organic Compounds	Benzene (mg/L)	<0.00050				
	Ethylbenzene (mg/L)	<0.00050				
	Methyl t-butyl ether (MTBE) (mg/L)	<0.00050				
	Styrene (mg/L)	<0.00050				
	Toluene (mg/L)	<0.00045				
	ortho-Xylene (mg/L)	<0.00050				
	meta- & para-Xylene (mg/L)	<0.00050				

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
EC-SCREEN-VA	Water	Conductivity Screen (Internal Use Only)	APHA 2510
Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
OGG-SF-VA	Water	Oil & Grease by Gravimetric	BCMOE (2010), EPA1664A
The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.			
PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value
This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode It is recommended that this analysis be conducted in the field.			
TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.			
VOC7-HSMS-VA	Water	BTEX/MTBE/Styrene by Headspace GCMS	EPA 5021A/8260C
The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: SABINA GOLD & SILVER CORP.
Suite 1800 - 555 Burrard St. Box 220
Vancouver BC V7X 1M7
Contact: Merle Keefe

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	**Water**							
Batch R5148061								
WG3360011-2 LCS								
Lead (Pb)-Total			100.8		%		80-120	11-JUL-20
WG3360011-1 MB								
Lead (Pb)-Total			<0.000050		mg/L		0.00005	11-JUL-20
OGG-SF-VA	**Water**							
Batch R5148778								
WG3360252-2 LCS								
Oil and Grease			101.0		%		70-130	10-JUL-20
WG3360252-1 MB								
Oil and Grease			<5.0		mg/L		5	10-JUL-20
PH-PCT-VA	**Water**							
Batch R5146356								
WG3357683-2 CRM		**VA-PH7-BUF**						
pH			6.99		pH		6.9-7.1	08-JUL-20
TSS-VA	**Water**							
Batch R5147589								
WG3358593-2 LCS								
Total Suspended Solids			91.5		%		85-115	09-JUL-20
WG3358593-1 MB								
Total Suspended Solids			<3.0		mg/L		3	09-JUL-20
VOC7-HSMS-VA	**Water**							
Batch R5139097								
WG3358394-2 LCS								
Benzene			116.9		%		70-130	09-JUL-20
Ethylbenzene			115.3		%		70-130	09-JUL-20
Methyl t-butyl ether (MTBE)			114.2		%		70-130	09-JUL-20
Styrene			107.0		%		70-130	09-JUL-20
Toluene			119.7		%		70-130	09-JUL-20
meta- & para-Xylene			113.0		%		70-130	09-JUL-20
ortho-Xylene			111.0		%		70-130	09-JUL-20
WG3358394-1 MB								
Benzene			<0.00050		mg/L		0.0005	09-JUL-20
Ethylbenzene			<0.00050		mg/L		0.0005	09-JUL-20
Methyl t-butyl ether (MTBE)			<0.00050		mg/L		0.0005	09-JUL-20
Styrene			<0.00050		mg/L		0.0005	09-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC7-HSMS-VA	**Water**							
Batch R5139097								
WG3358394-1 MB								
Toluene			<0.00045		mg/L		0.00045	09-JUL-20
meta- & para-Xylene			<0.00050		mg/L		0.0005	09-JUL-20
ortho-Xylene			<0.00050		mg/L		0.0005	09-JUL-20

Quality Control Report

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH by Meter (Automated)							
	1	02-JUL-20 08:00	08-JUL-20 15:16	0.25	151	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2469538 were received on 03-JUL-20 10:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # _____

Page 1 of 1

Report To:		Report Format / Distribution	Service Requested (Rush for routine analysis subject to availability)
Company:	Sabina Gold and Silver Corp		Regular
Contact:	Merle Keefe		
Address:	1800-555 Burrard St	Email 1: mkeefe@sabinagoldsilver.com	
	Vancouver, BC, V7X 1M7	Email 2:	
Phone:	604-240-6619 Fax:	Email 3:	Analysis Request
Invoice To	Same as Report ?	Client / Project Information	Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?		Job #:	
Company:	Sabina Gold and Silver Corp	PO / AFE:	
Contact:	Accounts payable	LSD:	
Address:			
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)	L2469538	ALS Contact:	Sampler: BRUCE BARNES

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	pH	TSS	Oil & Grease (mg/L)	BTEX	Lead	Number of Containers
	Goose Fuel 1			Surface Water	X	X	X	x	x	6
	Fuel station Berm	02-06-20	8am							

L2469538-COFC

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by: MH	Date: July 3	Time: 10:00	Temperature: 5.5 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

WH [illegible] 10:00 [illegible]

SABINA GOLD & SILVER CORP.
ATTN: Merle Keefe
Suite 1800 - 555 Burrard St.
Box 220
Vancouver BC V7X 1M7

Date Received: 21-JUL-20
Report Date: 30-JUL-20 16:18 (MT)
Version: FINAL

Client Phone: 604-240-6619

Certificate of Analysis

Lab Work Order #: L2477550

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc:

Oliver Gregg
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2477550-1				
	Description	SURFACE WATE				
	Sampled Date	19-JUL-20				
	Sampled Time	13:40				
	Client ID	MLA FUEL 2				
Grouping	**Analyte**					
WATER						
Physical Tests	pH (pH)	5.78				
	Total Suspended Solids (mg/L)	<3.0				
Total Metals	Lead (Pb)-Total (mg/L)	0.000513				
Aggregate Organics	Oil and Grease (mg/L)	<5.0				
Volatile Organic Compounds	Benzene (mg/L)	<0.00050				
	Ethylbenzene (mg/L)	0.00068				
	Methyl t-butyl ether (MTBE) (mg/L)	<0.00050				
	Styrene (mg/L)	<0.00050				
	Toluene (mg/L)	0.00050				
	ortho-Xylene (mg/L)	0.00589				
	meta- & para-Xylene (mg/L)	0.00416				

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
EC-SCREEN-VA	Water	Conductivity Screen (Internal Use Only)	APHA 2510
Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
OGG-SF-VA	Water	Oil & Grease by Gravimetric	BCMOE (2010), EPA1664A
The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.			
PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value
This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode It is recommended that this analysis be conducted in the field.			
TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.			
VOC7-HSMS-VA	Water	BTEX/MTBE/Styrene by Headspace GCMS	EPA 5021A/8260C
The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: SABINA GOLD & SILVER CORP.
Suite 1800 - 555 Burrard St. Box 220
Vancouver BC V7X 1M7
Contact: Merle Keefe

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	**Water**							
Batch R5167629								
WG3370389-2 LCS								
Lead (Pb)-Total			105.0		%		80-120	26-JUL-20
WG3370389-1 MB								
Lead (Pb)-Total			<0.000050		mg/L		0.00005	26-JUL-20
WG3370389-4 MS		**L2477550-1**						
Lead (Pb)-Total			98.2		%		70-130	26-JUL-20
OGG-SF-VA	**Water**							
Batch R5172393								
WG3373619-2 LCS								
Oil and Grease			99.4		%		70-130	30-JUL-20
WG3373619-1 MB								
Oil and Grease			<5.0		mg/L		5	30-JUL-20
PH-PCT-VA	**Water**							
Batch R5168258								
WG3371285-2 CRM		**VA-PH7-BUF**						
pH			6.99		pH		6.9-7.1	27-JUL-20
TSS-VA	**Water**							
Batch R5167646								
WG3370619-2 LCS								
Total Suspended Solids			92.5		%		85-115	26-JUL-20
WG3370619-1 MB								
Total Suspended Solids			<3.0		mg/L		3	26-JUL-20
VOC7-HSMS-VA	**Water**							
Batch R5149613								
WG3369407-2 LCS								
Benzene			97.9		%		70-130	24-JUL-20
Ethylbenzene			92.1		%		70-130	24-JUL-20
Methyl t-butyl ether (MTBE)			102.5		%		70-130	24-JUL-20
Styrene			82.0		%		70-130	24-JUL-20
Toluene			94.2		%		70-130	24-JUL-20
meta- & para-Xylene			101.7		%		70-130	24-JUL-20
ortho-Xylene			101.2		%		70-130	24-JUL-20
WG3369407-1 MB								
Benzene			<0.00050		mg/L		0.0005	24-JUL-20
Ethylbenzene			<0.00050		mg/L		0.0005	24-JUL-20
Methyl t-butyl ether (MTBE)			<0.00050		mg/L		0.0005	24-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC7-HSMS-VA	**Water**							
Batch R5149613								
WG3369407-1 MB								
Styrene			<0.00050		mg/L		0.0005	24-JUL-20
Toluene			<0.00045		mg/L		0.00045	24-JUL-20
meta- & para-Xylene			<0.00050		mg/L		0.0005	24-JUL-20
ortho-Xylene			<0.00050		mg/L		0.0005	24-JUL-20

Quality Control Report

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH by Meter (Automated)							
	1	19-JUL-20 13:40	27-JUL-20 09:24	0.25	188	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477550 were received on 21-JUL-20 15:15.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # _____

Page 1 of 1

Report To:		**Report Format / Distribution**	**Service Requested** (Rush for routine analysis subject to availability)
Company:	Sabina Gold and Silver Corp		
Contact:	Merle Keefe		**Regular**
Address:	1800-555 Burrard St	Email 1: mkeefe@sabinagoldsilver.com	
	Vancouver, BC, V7X 1M7	Email 2:	
Phone:	604-240-6619 Fax:	Email 3:	**Analysis Request**
Invoice To	Same as Report ?	**Client / Project Information**	Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?		Job #:	
Company:	Sabina Gold and Silver Corp	PO / AFE:	
Contact:	Accounts payable	LSD:	
Address:			
Phone:	Fax:	Quote #:	

Lab Work Order # (lab use only)	L2477550	ALS Contact:	Sampler:

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	pH	TSS	Oil & Grease (mg/L)	BTEX	Lead	Number of Containers
	MLA Fuel 2	18-JUL-20	1:40 pm	Surface Water	X	X	X	x	x	6

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
			MH	July 21 2020	3:15	7.8 10.4 °C				

SABINA GOLD & SILVER CORP.
ATTN: Merle Keefe
Suite 1800 - 555 Burrard St.
Box 220
Vancouver BC V7X 1M7

Date Received: 21-JUL-20
Report Date: 30-JUL-20 16:18 (MT)
Version: FINAL

Client Phone: 604-240-6619

Certificate of Analysis

Lab Work Order #: L2477544

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc:

Oliver Gregg
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2477544-1				
	Description	SURFACE WATE				
	Sampled Date	19-JUL-20				
	Sampled Time	13:35				
	Client ID	MLA FUEL 1				
Grouping	**Analyte**					
WATER						
Physical Tests	pH (pH)	5.42				
	Total Suspended Solids (mg/L)	<3.0				
Total Metals	Lead (Pb)-Total (mg/L)	0.000059				
Aggregate Organics	Oil and Grease (mg/L)	<5.0				
Volatile Organic Compounds	Benzene (mg/L)	<0.00050				
	Ethylbenzene (mg/L)	<0.00050				
	Methyl t-butyl ether (MTBE) (mg/L)	<0.00050				
	Styrene (mg/L)	<0.00050				
	Toluene (mg/L)	<0.00045				
	ortho-Xylene (mg/L)	0.00065				
	meta- & para-Xylene (mg/L)	0.00087				

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
EC-SCREEN-VA	Water	Conductivity Screen (Internal Use Only)	APHA 2510
Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
OGG-SF-VA	Water	Oil & Grease by Gravimetric	BCMOE (2010), EPA1664A
The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.			
PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value
This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode It is recommended that this analysis be conducted in the field.			
TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.			
VOC7-HSMS-VA	Water	BTEX/MTBE/Styrene by Headspace GCMS	EPA 5021A/8260C
The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: SABINA GOLD & SILVER CORP.
Suite 1800 - 555 Burrard St. Box 220
Vancouver BC V7X 1M7
Contact: Merle Keefe

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	**Water**							
Batch R5167629								
WG3370389-3 DUP		**L2477544-1**						
Lead (Pb)-Total		0.000059	0.000059		mg/L	0.4	20	26-JUL-20
WG3370389-2 LCS								
Lead (Pb)-Total			105.0		%		80-120	26-JUL-20
WG3370389-1 MB								
Lead (Pb)-Total			<0.000050		mg/L		0.00005	26-JUL-20
OGG-SF-VA	**Water**							
Batch R5172393								
WG3373619-2 LCS								
Oil and Grease			99.4		%		70-130	30-JUL-20
WG3373619-1 MB								
Oil and Grease			<5.0		mg/L		5	30-JUL-20
PH-PCT-VA	**Water**							
Batch R5171683								
WG3372415-2 CRM		**VA-PH7-BUF**						
pH			6.99		pH		6.9-7.1	29-JUL-20
TSS-VA	**Water**							
Batch R5167646								
WG3370619-3 DUP		**L2477544-1**						
Total Suspended Solids		<3.0	<3.0	RPD-NA	mg/L	N/A	20	26-JUL-20
WG3370619-2 LCS								
Total Suspended Solids			92.5		%		85-115	26-JUL-20
WG3370619-1 MB								
Total Suspended Solids			<3.0		mg/L		3	26-JUL-20
VOC7-HSMS-VA	**Water**							
Batch R5149613								
WG3369407-2 LCS								
Benzene			97.9		%		70-130	24-JUL-20
Ethylbenzene			92.1		%		70-130	24-JUL-20
Methyl t-butyl ether (MTBE)			102.5		%		70-130	24-JUL-20
Styrene			82.0		%		70-130	24-JUL-20
Toluene			94.2		%		70-130	24-JUL-20
meta- & para-Xylene			101.7		%		70-130	24-JUL-20
ortho-Xylene			101.2		%		70-130	24-JUL-20
WG3369407-1 MB								
Benzene			<0.00050		mg/L		0.0005	24-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC7-HSMS-VA	**Water**							
Batch R5149613								
WG3369407-1 MB								
Ethylbenzene			<0.00050		mg/L		0.0005	24-JUL-20
Methyl t-butyl ether (MTBE)			<0.00050		mg/L		0.0005	24-JUL-20
Styrene			<0.00050		mg/L		0.0005	24-JUL-20
Toluene			<0.00045		mg/L		0.00045	24-JUL-20
meta- & para-Xylene			<0.00050		mg/L		0.0005	24-JUL-20
ortho-Xylene			<0.00050		mg/L		0.0005	24-JUL-20

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH by Meter (Automated)							
	1	19-JUL-20 13:35	29-JUL-20 16:14	0.25	243	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477544 were received on 21-JUL-20 15:15.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # _____

Page 1 of 1

Report To:		Report Format / Distribution	Service Requested (Rush for routine analysis subject to availability)
Company:	Sabina Gold and Silver Corp		Regular
Contact:	Merle Keefe		
Address:	1800-555 Burrard St	Email 1: mkeefe@sabinagoldsilver.com	
	Vancouver, BC, V7X 1M7	Email 2:	
Phone:	604-240-6619 Fax:	Email 3:	
Invoice To	Same as Report ?	**Client / Project Information**	
Hardcopy of Invoice with Report?		Job #:	
Company:	Sabina Gold and Silver Corp	PO / AFE:	
Contact:	Accounts payable	LSD:	
Address:			
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)	L2477544	ALS Contact:	Sampler:

Analysis Request

Please indicate below Filtered, Preserved or both (F, P, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	pH	TSS	Oil & Grease (mg/L)	BTEX	Lead	Number of Containers
	MLA Fuel 1	19-Jun-20	1:35pm	Surface Water	X	X	X	x	x	6

L2477544-COFC

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by: MA	Date: 5-Jul-20	Time: 3:15	Temperature: 7.8 10.4 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

SABINA GOLD & SILVER CORP.
ATTN: Merle Keefe
Suite 1800 - 555 Burrard St.
Box 220
Vancouver BC V7X 1M7

Date Received: 21-JUL-20
Report Date: 30-JUL-20 16:20 (MT)
Version: FINAL

Client Phone: 604-240-6619

Certificate of Analysis

Lab Work Order #: L2477554

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc:

Oliver Gregg
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2477554-1				
	Description	SURFACE WATE				
	Sampled Date	19-JUL-20				
	Sampled Time	13:50				
	Client ID	MLA FUEL 4				
Grouping	**Analyte**					
WATER						
Physical Tests	pH (pH)	6.22				
	Total Suspended Solids (mg/L)	3.3				
Total Metals	Lead (Pb)-Total (mg/L)	<0.000050				
Aggregate Organics	Oil and Grease (mg/L)	<5.0				
Volatile Organic Compounds	Benzene (mg/L)	<0.00050				
	Ethylbenzene (mg/L)	<0.00050				
	Methyl t-butyl ether (MTBE) (mg/L)	<0.00050				
	Styrene (mg/L)	<0.00050				
	Toluene (mg/L)	<0.00045				
	ortho-Xylene (mg/L)	<0.00050				
	meta- & para-Xylene (mg/L)	<0.00050				

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
EC-SCREEN-VA	Water	Conductivity Screen (Internal Use Only)	APHA 2510
Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
OGG-SF-VA	Water	Oil & Grease by Gravimetric	BCMOE (2010), EPA1664A
The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.			
PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value
This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode It is recommended that this analysis be conducted in the field.			
TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.			
VOC7-HSMS-VA	Water	BTEX/MTBE/Styrene by Headspace GCMS	EPA 5021A/8260C
The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2477554 Report Date: 30-JUL-20

Client: SABINA GOLD & SILVER CORP.
Suite 1800 - 555 Burrard St. Box 220
Vancouver BC V7X 1M7
Contact: Merle Keefe

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	**Water**							
Batch R5167629								
WG3370389-2 LCS								
Lead (Pb)-Total			105.0		%		80-120	26-JUL-20
WG3370389-1 MB								
Lead (Pb)-Total			<0.000050		mg/L		0.00005	26-JUL-20
OGG-SF-VA	**Water**							
Batch R5172393								
WG3373619-2 LCS								
Oil and Grease			99.4		%		70-130	30-JUL-20
WG3373619-1 MB								
Oil and Grease			<5.0		mg/L		5	30-JUL-20
PH-PCT-VA	**Water**							
Batch R5168258								
WG3371285-2 CRM		**VA-PH7-BUF**						
pH			6.99		pH		6.9-7.1	27-JUL-20
TSS-VA	**Water**							
Batch R5167646								
WG3370619-2 LCS								
Total Suspended Solids			92.5		%		85-115	26-JUL-20
WG3370619-1 MB								
Total Suspended Solids			<3.0		mg/L		3	26-JUL-20
VOC7-HSMS-VA	**Water**							
Batch R5149613								
WG3369407-2 LCS								
Benzene			97.9		%		70-130	24-JUL-20
Ethylbenzene			92.1		%		70-130	24-JUL-20
Methyl t-butyl ether (MTBE)			102.5		%		70-130	24-JUL-20
Styrene			82.0		%		70-130	24-JUL-20
Toluene			94.2		%		70-130	24-JUL-20
meta- & para-Xylene			101.7		%		70-130	24-JUL-20
ortho-Xylene			101.2		%		70-130	24-JUL-20
WG3369407-1 MB								
Benzene			<0.00050		mg/L		0.0005	24-JUL-20
Ethylbenzene			<0.00050		mg/L		0.0005	24-JUL-20
Methyl t-butyl ether (MTBE)			<0.00050		mg/L		0.0005	24-JUL-20
Styrene			<0.00050		mg/L		0.0005	24-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC7-HSMS-VA	**Water**							
Batch R5149613								
WG3369407-1 MB								
Toluene			<0.00045		mg/L		0.00045	24-JUL-20
meta- & para-Xylene			<0.00050		mg/L		0.0005	24-JUL-20
ortho-Xylene			<0.00050		mg/L		0.0005	24-JUL-20

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH by Meter (Automated)							
	1	19-JUL-20 13:50	27-JUL-20 09:24	0.25	188	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477554 were received on 21-JUL-20 15:15.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # _____

Page 1 of 1

Report To:		**Report Format / Distribution**	**Service Requested** (Rush for routine analysis subject to availability)
Company:	Sabina Gold and Silver Corp		**Regular**
Contact:	Merle Keefe		
Address:	1800-555 Burrard St	Email 1: mkeefe@sabinagoldsilver.com	
	Vancouver, BC, V7X 1M7	Email 2:	
Phone:	604-240-6619 Fax:	Email 3:	**Analysis Request**
Invoice To	Same as Report ?	**Client / Project Information**	Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?		Job #:	
Company:	Sabina Gold and Silver Corp	PO / AFE:	
Contact:	Accounts payable	LSD:	
Address:			
Phone:	Fax:	Quote #:	

Lab Work Order # (lab use only)	L2477554	ALS Contact:	Sampler:

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	pH	TSS	Oil & Grease (mg/L)	BTEX	Lead	Number of Containers
	MLA Fuel 4	19-Jul-20	1:50pm	Surface Water	X	X	X	x	x	6

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
			M. Khan	July 21/20	3:15pm	7.8 10.4 °C				

SABINA GOLD & SILVER CORP.
ATTN: Merle Keefe
Suite 1800 - 555 Burrard St.
Box 220
Vancouver BC V7X 1M7

Date Received: 21-JUL-20
Report Date: 30-JUL-20 16:19 (MT)
Version: FINAL

Client Phone: 604-240-6619

Certificate of Analysis

Lab Work Order #: L2477553

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc:

Oliver Gregg
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2477553-1				
	Description	SURFACE WATE				
	Sampled Date	19-JUL-20				
	Sampled Time	13:45				
	Client ID	MLA FUEL 3				
Grouping	**Analyte**					
WATER						
Physical Tests	pH (pH)	5.06				
	Total Suspended Solids (mg/L)	<3.0				
Total Metals	Lead (Pb)-Total (mg/L)	0.000069				
Aggregate Organics	Oil and Grease (mg/L)	<5.0				
Volatile Organic Compounds	Benzene (mg/L)	<0.00050				
	Ethylbenzene (mg/L)	<0.00050				
	Methyl t-butyl ether (MTBE) (mg/L)	<0.00050				
	Styrene (mg/L)	<0.00050				
	Toluene (mg/L)	<0.00045				
	ortho-Xylene (mg/L)	<0.00050				
	meta- & para-Xylene (mg/L)	<0.00050				

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
EC-SCREEN-VA	Water	Conductivity Screen (Internal Use Only)	APHA 2510
Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
OGG-SF-VA	Water	Oil & Grease by Gravimetric	BCMOE (2010), EPA1664A
The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.			
PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value
This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode It is recommended that this analysis be conducted in the field.			
TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.			
VOC7-HSMS-VA	Water	BTEX/MTBE/Styrene by Headspace GCMS	EPA 5021A/8260C
The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2477553 Report Date: 30-JUL-20

Client: SABINA GOLD & SILVER CORP.
Suite 1800 - 555 Burrard St. Box 220
Vancouver BC V7X 1M7
Contact: Merle Keefe

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	**Water**							
Batch R5167629								
WG3370389-2 LCS								
Lead (Pb)-Total			105.0		%		80-120	26-JUL-20
WG3370389-1 MB								
Lead (Pb)-Total			<0.000050		mg/L		0.00005	26-JUL-20
OGG-SF-VA	**Water**							
Batch R5172393								
WG3373619-2 LCS								
Oil and Grease			99.4		%		70-130	30-JUL-20
WG3373619-1 MB								
Oil and Grease			<5.0		mg/L		5	30-JUL-20
PH-PCT-VA	**Water**							
Batch R5168258								
WG3371285-2 CRM		**VA-PH7-BUF**						
pH			6.99		pH		6.9-7.1	27-JUL-20
TSS-VA	**Water**							
Batch R5167646								
WG3370619-2 LCS								
Total Suspended Solids			92.5		%		85-115	26-JUL-20
WG3370619-1 MB								
Total Suspended Solids			<3.0		mg/L		3	26-JUL-20
VOC7-HSMS-VA	**Water**							
Batch R5149613								
WG3369407-2 LCS								
Benzene			97.9		%		70-130	24-JUL-20
Ethylbenzene			92.1		%		70-130	24-JUL-20
Methyl t-butyl ether (MTBE)			102.5		%		70-130	24-JUL-20
Styrene			82.0		%		70-130	24-JUL-20
Toluene			94.2		%		70-130	24-JUL-20
meta- & para-Xylene			101.7		%		70-130	24-JUL-20
ortho-Xylene			101.2		%		70-130	24-JUL-20
WG3369407-1 MB								
Benzene			<0.00050		mg/L		0.0005	24-JUL-20
Ethylbenzene			<0.00050		mg/L		0.0005	24-JUL-20
Methyl t-butyl ether (MTBE)			<0.00050		mg/L		0.0005	24-JUL-20
Styrene			<0.00050		mg/L		0.0005	24-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC7-HSMS-VA	**Water**							
Batch R5149613								
WG3369407-1 MB								
Toluene			<0.00045		mg/L		0.00045	24-JUL-20
meta- & para-Xylene			<0.00050		mg/L		0.0005	24-JUL-20
ortho-Xylene			<0.00050		mg/L		0.0005	24-JUL-20

Quality Control Report

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH by Meter (Automated)							
	1	19-JUL-20 13:45	27-JUL-20 09:24	0.25	188	hours	EHTR-FM

Legend & Qualifier Definitions:

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Rec. HT:	ALS recommended hold time (see units).

Notes*:
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Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477553 were received on 21-JUL-20 15:15.

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The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # _____

Page 1 of 1

Report To:		**Report Format / Distribution**	**Service Requested** (Rush for routine analysis subject to availability)
Company:	Sabina Gold and Silver Corp		**Regular**
Contact:	Merle Keefe		
Address:	1800-555 Burrard St	Email 1: mkeefe@sabinagoldsilver.com	
	Vancouver, BC, V7X 1M7	Email 2:	
Phone:	604-240-6619 Fax:	Email 3:	**Analysis Request**
Invoice To	Same as Report ?	**Client / Project Information**	Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?		Job #:	
Company:	Sabina Gold and Silver Corp	PO / AFE:	
Contact:	Accounts payable	LSD:	
Address:			
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)	L2477553	**ALS Contact:**	**Sampler:**

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	pH	TSS	Oil & Grease (mg/L)	BTEX	Lead	Number of Containers
	MLA Fuel 3	19-Jul-20	1:45 pm	Surface Water	X	X	X	x	x	6

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
			MA	July 21/20	3:15	7.8 10.4 °C				

SABINA GOLD & SILVER CORP.
ATTN: Merle Keefe
Suite 1800 - 555 Burrard St.
Box 220
Vancouver BC V7X 1M7

Date Received: 31-AUG-20
Report Date: 15-SEP-20 09:28 (MT)
Version: FINAL

Client Phone: 604-240-6619

Certificate of Analysis

Lab Work Order #: L2496996

Project P.O. #: NOT SUBMITTED
Job Reference: PARAMETER LIST D
C of C Numbers: 17-817715
Legal Site Desc:

Oliver Gregg
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2496996-1				
	Description	WATER				
	Sampled Date	30-AUG-20				
	Sampled Time	19:00				
	Client ID	MLA LAKE 3				
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	112				
	Hardness (as CaCO3) (mg/L)	62.2				
	pH (pH)	7.90				
	Total Suspended Solids (mg/L)	<3.0				
	Total Dissolved Solids (mg/L)	80				
	TDS (Calculated) (mg/L)	53.8				
	Turbidity (NTU)	0.66				
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	46.9				
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0				
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0				
	Alkalinity, Phenolphthalein (as CaCO3) (mg/L)	<2.0				
	Alkalinity, Total (as CaCO3) (mg/L)	46.9				
	Ammonia, Total (as N) (mg/L)	0.0069				
	Bromide (Br) (mg/L)	<0.050				
	Chloride (Cl) (mg/L)	1.83				
	Fluoride (F) (mg/L)	0.021				
	Nitrate and Nitrite (as N) (mg/L)	<0.0051				
	Nitrate (as N) (mg/L)	<0.0050				
	Nitrite (as N) (mg/L)	<0.0010				
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010				
	Phosphorus (P)-Total (mg/L)	0.0061				
	Sulfate (SO4) (mg/L)	0.42				
	Anion Sum (meq/L)	1.00				
	Cation Sum (meq/L)	1.33				
	Cation - Anion Balance (%)	14.4				
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0050				
	Cyanide, Total (mg/L)	<0.0050				
	Cyanide, Free (mg/L)	<0.0050				
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	3.99				
Total Metals	Aluminum (Al)-Total (mg/L)	0.0128				
	Antimony (Sb)-Total (mg/L)	<0.00010				
	Arsenic (As)-Total (mg/L)	0.00025				
	Barium (Ba)-Total (mg/L)	0.0156				
	Beryllium (Be)-Total (mg/L)	<0.00010				
	Bismuth (Bi)-Total (mg/L)	<0.000050				
	Boron (B)-Total (mg/L)	<0.010				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2496996-1				
	Description	WATER				
	Sampled Date	30-AUG-20				
	Sampled Time	19:00				
	Client ID	MLA LAKE 3				
Grouping	**Analyte**					
WATER						
Total Metals	Cadmium (Cd)-Total (mg/L)	0.0000141				
	Calcium (Ca)-Total (mg/L)	13.6				
	Cesium (Cs)-Total (mg/L)	<0.000010				
	Chromium (Cr)-Total (mg/L)	<0.00010				
	Cobalt (Co)-Total (mg/L)	<0.00010				
	Copper (Cu)-Total (mg/L)	0.00094				
	Iron (Fe)-Total (mg/L)	0.033				
	Lead (Pb)-Total (mg/L)	<0.000050				
	Lithium (Li)-Total (mg/L)	<0.0010				
	Magnesium (Mg)-Total (mg/L)	5.06				
	Manganese (Mn)-Total (mg/L)	0.00321				
	Mercury (Hg)-Total (mg/L)	<0.0000050				
	Molybdenum (Mo)-Total (mg/L)	0.000140				
	Nickel (Ni)-Total (mg/L)	<0.00050				
	Phosphorus (P)-Total (mg/L)	<0.050				
	Potassium (K)-Total (mg/L)	0.447				
	Rubidium (Rb)-Total (mg/L)	0.00024				
	Selenium (Se)-Total (mg/L)	<0.000050				
	Silicon (Si)-Total (mg/L)	0.81				
	Silver (Ag)-Total (mg/L)	<0.000010				
	Sodium (Na)-Total (mg/L)	1.53				
	Strontium (Sr)-Total (mg/L)	0.00877				
	Sulfur (S)-Total (mg/L)	<0.50				
	Tellurium (Te)-Total (mg/L)	<0.00020				
	Thallium (Tl)-Total (mg/L)	<0.000010				
	Thorium (Th)-Total (mg/L)	<0.00010				
	Tin (Sn)-Total (mg/L)	<0.00010				
	Titanium (Ti)-Total (mg/L)	<0.00030				
	Tungsten (W)-Total (mg/L)	<0.00010				
	Uranium (U)-Total (mg/L)	0.000260				
	Vanadium (V)-Total (mg/L)	<0.00050				
	Zinc (Zn)-Total (mg/L)	0.0071				
	Zirconium (Zr)-Total (mg/L)	<0.00020				
Dissolved Metals	Dissolved Mercury Filtration Location	LAB				
	Dissolved Metals Filtration Location	LAB				
	Aluminum (Al)-Dissolved (mg/L)	0.0062				
	Antimony (Sb)-Dissolved (mg/L)	<0.00010				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2496996-1				
	Description	WATER				
	Sampled Date	30-AUG-20				
	Sampled Time	19:00				
	Client ID	MLA LAKE 3				
Grouping	**Analyte**					
WATER						
Dissolved Metals	Arsenic (As)-Dissolved (mg/L)	0.00023				
	Barium (Ba)-Dissolved (mg/L)	0.0165				
	Beryllium (Be)-Dissolved (mg/L)	<0.00010				
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050				
	Boron (B)-Dissolved (mg/L)	<0.010				
	Cadmium (Cd)-Dissolved (mg/L)	0.0000065				
	Calcium (Ca)-Dissolved (mg/L)	15.2				
	Cesium (Cs)-Dissolved (mg/L)	<0.000010				
	Chromium (Cr)-Dissolved (mg/L)	<0.00010				
	Cobalt (Co)-Dissolved (mg/L)	<0.00010				
	Copper (Cu)-Dissolved (mg/L)	0.00085				
	Iron (Fe)-Dissolved (mg/L)	<0.010				
	Lead (Pb)-Dissolved (mg/L)	<0.000050				
	Lithium (Li)-Dissolved (mg/L)	<0.0010				
	Magnesium (Mg)-Dissolved (mg/L)	5.93				
	Manganese (Mn)-Dissolved (mg/L)	<0.00010				
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050				
	Molybdenum (Mo)-Dissolved (mg/L)	0.000134				
	Nickel (Ni)-Dissolved (mg/L)	<0.00050				
	Phosphorus (P)-Dissolved (mg/L)	<0.050				
	Potassium (K)-Dissolved (mg/L)	0.532				
	Rubidium (Rb)-Dissolved (mg/L)	0.00029				
	Selenium (Se)-Dissolved (mg/L)	<0.000050				
	Silicon (Si)-Dissolved (mg/L)	0.793				
	Silver (Ag)-Dissolved (mg/L)	<0.000010				
	Sodium (Na)-Dissolved (mg/L)	1.75				
	Strontium (Sr)-Dissolved (mg/L)	0.00995				
	Sulfur (S)-Dissolved (mg/L)	<0.50				
	Tellurium (Te)-Dissolved (mg/L)	<0.00020				
	Thallium (Tl)-Dissolved (mg/L)	<0.000010				
	Thorium (Th)-Dissolved (mg/L)	<0.00010				
	Tin (Sn)-Dissolved (mg/L)	<0.00010				
	Titanium (Ti)-Dissolved (mg/L)	<0.00030				
	Tungsten (W)-Dissolved (mg/L)	<0.00010				
	Uranium (U)-Dissolved (mg/L)	0.000305				
	Vanadium (V)-Dissolved (mg/L)	<0.00050				
	Zinc (Zn)-Dissolved (mg/L)	0.0069				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2496996-1				
Description	WATER				
Sampled Date	30-AUG-20				
Sampled Time	19:00				
Client ID	MLA LAKE 3				
Grouping **Analyte**					
WATER					
Dissolved Metals Zirconium (Zr)-Dissolved (mg/L)	<0.00020				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Individual Samples Listed:

Sample Number	Client Sample ID	Qualifier	Description
L2496996-1	MLA LAKE 3	WSMT	Water sample(s) for total mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
		WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Dissolved Organic Carbon	MS-B	L2496996-1
Matrix Spike	Aluminum (Al)-Dissolved	MS-B	L2496996-1
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2496996-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2496996-1
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L2496996-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2496996-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2496996-1
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2496996-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2496996-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2496996-1
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2496996-1
Matrix Spike	Arsenic (As)-Total	MS-B	L2496996-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2496996-1
Matrix Spike	Cobalt (Co)-Total	MS-B	L2496996-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2496996-1
Matrix Spike	Manganese (Mn)-Total	MS-B	L2496996-1
Matrix Spike	Nickel (Ni)-Total	MS-B	L2496996-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2496996-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2496996-1
Matrix Spike	Sulfur (S)-Total	MS-B	L2496996-1
Matrix Spike	Phosphorus (P)-Total	MS-B	L2496996-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-TITR-VA	Water	Alkalinity Species by Titration	APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ANIONS-N+N-CALC-VA	Water	Nitrite & Nitrate in Water (Calculation)	EPA 300.0

Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

BR-L-IC-N-VA	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CARBONS-DOC-VA	Water	Dissolved organic carbon by combustion	APHA 5310B

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CL-IC-N-VA	Water	Chloride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CN-FREE-CFA-VA	Water	Free Cyanide in water by CFA	ASTM 7237

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

CN-T-CFA-VA	Water	Total Cyanide in water by CFA	ISO 14403:2002

Reference Information

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

CN-WAD-CFA-VA Water Weak Acid Diss. Cyanide in water by CFA APHA 4500-CN CYANIDE

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

EC-SCREEN-VA Water Conductivity Screen (Internal Use Only) APHA 2510

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

F-IC-N-VA Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-VA Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-PRES-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.
Samples with very high dissolved solids (i.e. seawaters, brackish waters) may produce a negative bias by this method. Alternate methods are available for these types of samples.

Reference Information

Arsenic (5+), at elevated levels, is a positive interference on colourimetric phosphate analysis.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.
Samples with very high dissolved solids (i.e. seawaters, brackish waters) may produce a negative bias by this method. Alternate methods are available for these types of samples.

Arsenic (5+), at elevated levels, is a positive interference on colourimetric phosphate analysis.

SO4-IC-N-VA Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

TDS-CALC-VA Water TDS (Calculated) APHA 1030E (20TH EDITION)

This analysis is carried out using procedures adapted from APHA 1030E "Checking Correctness of Analyses".
The Total Dissolved Solids result is calculated from measured concentrations of anions and cations in the sample.

TDS-VA Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-VA Water Total Suspended Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.
Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

17-817715

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: SABINA GOLD & SILVER CORP.
Suite 1800 - 555 Burrard St. Box 220
Vancouver BC V7X 1M7
Contact: Merle Keefe

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-VA	**Water**							
Batch R5210648								
WG3398154-3 LCS								
Alkalinity, Total (as CaCO3)			100.8		%		85-115	04-SEP-20
Alkalinity, Phenolphthalein (as CaCO3)			121.7		%		75-125	04-SEP-20
WG3398154-1 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	04-SEP-20
Alkalinity, Phenolphthalein (as CaCO3)			<2.0		mg/L		2	04-SEP-20
BR-L-IC-N-VA	**Water**							
Batch R5211117								
WG3398152-2 LCS								
Bromide (Br)			94.6		%		85-115	04-SEP-20
WG3398152-1 MB								
Bromide (Br)			<0.050		mg/L		0.05	04-SEP-20
CARBONS-DOC-VA	**Water**							
Batch R5210742								
WG3398165-2 LCS								
Dissolved Organic Carbon			100.5		%		80-120	03-SEP-20
WG3398165-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	03-SEP-20
CL-IC-N-VA	**Water**							
Batch R5211117								
WG3398152-2 LCS								
Chloride (Cl)			99.9		%		90-110	04-SEP-20
WG3398152-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	04-SEP-20
CN-FREE-CFA-VA	**Water**							
Batch R5222741								
WG3403313-2 LCS								
Cyanide, Free			97.0		%		80-120	12-SEP-20
WG3403313-1 MB								
Cyanide, Free			<0.0050		mg/L		0.005	12-SEP-20
CN-T-CFA-VA	**Water**							
Batch R5222741								
WG3403313-2 LCS								
Cyanide, Total			95.2		%		80-120	12-SEP-20
WG3403313-1 MB								
Cyanide, Total			<0.0050		mg/L		0.005	12-SEP-20
CN-WAD-CFA-VA	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CN-WAD-CFA-VA	**Water**							
Batch R5222741								
WG3403313-2 LCS								
Cyanide, Weak Acid Diss			98.8		%		80-120	12-SEP-20
WG3403313-1 MB								
Cyanide, Weak Acid Diss			<0.0050		mg/L		0.005	12-SEP-20
EC-PCT-VA	**Water**							
Batch R5210648								
WG3398154-3 LCS								
Conductivity			105.1		%		90-110	04-SEP-20
WG3398154-1 MB								
Conductivity			<2.0		uS/cm		2	04-SEP-20
F-IC-N-VA	**Water**							
Batch R5211117								
WG3398152-2 LCS								
Fluoride (F)			96.8		%		90-110	04-SEP-20
WG3398152-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	04-SEP-20
HG-D-CVAA-VA	**Water**							
Batch R5223601								
WG3404455-2 LCS								
Mercury (Hg)-Dissolved			97.2		%		80-120	15-SEP-20
WG3404455-1 MB		**LF**						
Mercury (Hg)-Dissolved			<0.000005		mg/L		0.000005	15-SEP-20
HG-T-CVAA-VA	**Water**							
Batch R5223601								
WG3404490-2 LCS								
Mercury (Hg)-Total			96.8		%		80-120	15-SEP-20
WG3404490-1 MB								
Mercury (Hg)-Total			<0.000005		mg/L		0.000005	15-SEP-20
WG3404490-4 MS		**L2496996-1**						
Mercury (Hg)-Total			96.3		%		70-130	15-SEP-20
MET-D-CCMS-VA	**Water**							
Batch R5223444								
WG3403110-2 LCS								
Aluminum (Al)-Dissolved			108.8		%		80-120	11-SEP-20
Antimony (Sb)-Dissolved			103.3		%		80-120	11-SEP-20
Arsenic (As)-Dissolved			109.0		%		80-120	11-SEP-20
Barium (Ba)-Dissolved			102.5		%		80-120	11-SEP-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	**Water**							
Batch R5223444								
WG3403110-2 LCS								
Beryllium (Be)-Dissolved			105.8		%		80-120	11-SEP-20
Bismuth (Bi)-Dissolved			119.5		%		80-120	11-SEP-20
Boron (B)-Dissolved			106.8		%		80-120	11-SEP-20
Cadmium (Cd)-Dissolved			106.2		%		80-120	11-SEP-20
Calcium (Ca)-Dissolved			106.7		%		80-120	11-SEP-20
Cesium (Cs)-Dissolved			104.1		%		80-120	11-SEP-20
Chromium (Cr)-Dissolved			107.4		%		80-120	11-SEP-20
Cobalt (Co)-Dissolved			110.1		%		80-120	11-SEP-20
Copper (Cu)-Dissolved			109.4		%		80-120	11-SEP-20
Iron (Fe)-Dissolved			100.6		%		80-120	11-SEP-20
Lead (Pb)-Dissolved			108.7		%		80-120	11-SEP-20
Lithium (Li)-Dissolved			109.7		%		80-120	11-SEP-20
Magnesium (Mg)-Dissolved			114.7		%		80-120	11-SEP-20
Manganese (Mn)-Dissolved			111.9		%		80-120	11-SEP-20
Molybdenum (Mo)-Dissolved			104.1		%		80-120	11-SEP-20
Nickel (Ni)-Dissolved			107.6		%		80-120	11-SEP-20
Phosphorus (P)-Dissolved			116.0		%		70-130	11-SEP-20
Potassium (K)-Dissolved			108.8		%		80-120	11-SEP-20
Rubidium (Rb)-Dissolved			117.0		%		80-120	11-SEP-20
Selenium (Se)-Dissolved			103.4		%		80-120	11-SEP-20
Silicon (Si)-Dissolved			111.6		%		60-140	11-SEP-20
Silver (Ag)-Dissolved			104.2		%		80-120	11-SEP-20
Sodium (Na)-Dissolved			116.6		%		80-120	11-SEP-20
Strontium (Sr)-Dissolved			112.5		%		80-120	11-SEP-20
Sulfur (S)-Dissolved			104.3		%		80-120	11-SEP-20
Tellurium (Te)-Dissolved			103.2		%		80-120	11-SEP-20
Thallium (Tl)-Dissolved			108.5		%		80-120	11-SEP-20
Thorium (Th)-Dissolved			105.0		%		80-120	11-SEP-20
Tin (Sn)-Dissolved			104.7		%		80-120	11-SEP-20
Titanium (Ti)-Dissolved			106.4		%		80-120	11-SEP-20
Tungsten (W)-Dissolved			109.0		%		80-120	11-SEP-20
Uranium (U)-Dissolved			115.6		%		80-120	11-SEP-20
Vanadium (V)-Dissolved			108.1		%		80-120	11-SEP-20
Zinc (Zn)-Dissolved			108.4		%		80-120	11-SEP-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	**Water**							
Batch R5223444								
WG3403110-2 LCS								
Zirconium (Zr)-Dissolved			106.5		%		80-120	11-SEP-20
WG3403110-1 MB		**LF**						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	11-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	11-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	11-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	11-SEP-20
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	11-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	11-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	11-SEP-20
Cadmium (Cd)-Dissolved			<0.000005C		mg/L		0.000005	11-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	11-SEP-20
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	11-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	11-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	11-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	11-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	11-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	11-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	11-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	11-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	11-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	11-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	11-SEP-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	11-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	11-SEP-20
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	11-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	11-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	11-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	11-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	11-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	11-SEP-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	11-SEP-20
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	11-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	11-SEP-20
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	11-SEP-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	**Water**							
Batch R5223444								
WG3403110-1 MB		**LF**						
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	11-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	11-SEP-20
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	11-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	11-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	11-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	11-SEP-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	11-SEP-20
MET-T-CCMS-VA	**Water**							
Batch R5223324								
WG3403461-2 LCS								
Aluminum (Al)-Total			97.9		%		80-120	14-SEP-20
Antimony (Sb)-Total			104.8		%		80-120	14-SEP-20
Arsenic (As)-Total			96.4		%		80-120	14-SEP-20
Barium (Ba)-Total			99.0		%		80-120	14-SEP-20
Beryllium (Be)-Total			98.6		%		80-120	14-SEP-20
Bismuth (Bi)-Total			103.3		%		80-120	14-SEP-20
Boron (B)-Total			94.2		%		80-120	14-SEP-20
Cadmium (Cd)-Total			99.6		%		80-120	14-SEP-20
Calcium (Ca)-Total			100.4		%		80-120	14-SEP-20
Cesium (Cs)-Total			101.2		%		80-120	14-SEP-20
Chromium (Cr)-Total			98.9		%		80-120	14-SEP-20
Cobalt (Co)-Total			99.7		%		80-120	14-SEP-20
Copper (Cu)-Total			97.9		%		80-120	14-SEP-20
Iron (Fe)-Total			102.1		%		80-120	14-SEP-20
Lead (Pb)-Total			102.7		%		80-120	14-SEP-20
Lithium (Li)-Total			96.3		%		80-120	14-SEP-20
Magnesium (Mg)-Total			96.5		%		80-120	14-SEP-20
Manganese (Mn)-Total			99.5		%		80-120	14-SEP-20
Molybdenum (Mo)-Total			100.9		%		80-120	14-SEP-20
Nickel (Ni)-Total			98.6		%		80-120	14-SEP-20
Phosphorus (P)-Total			103.1		%		80-120	14-SEP-20
Potassium (K)-Total			99.4		%		80-120	14-SEP-20
Rubidium (Rb)-Total			98.0		%		80-120	14-SEP-20
Selenium (Se)-Total			102.1		%		80-120	14-SEP-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	**Water**							
Batch R5223324								
WG3403461-2 LCS								
Silicon (Si)-Total			101.0		%		80-120	14-SEP-20
Silver (Ag)-Total			102.7		%		80-120	14-SEP-20
Sodium (Na)-Total			104.2		%		80-120	14-SEP-20
Strontium (Sr)-Total			105.9		%		80-120	14-SEP-20
Sulfur (S)-Total			91.8		%		80-120	14-SEP-20
Tellurium (Te)-Total			97.3		%		80-120	14-SEP-20
Thallium (Tl)-Total			102.5		%		80-120	14-SEP-20
Thorium (Th)-Total			97.8		%		80-120	14-SEP-20
Tin (Sn)-Total			100.3		%		80-120	14-SEP-20
Titanium (Ti)-Total			93.4		%		80-120	14-SEP-20
Tungsten (W)-Total			100.8		%		80-120	14-SEP-20
Uranium (U)-Total			103.7		%		80-120	14-SEP-20
Vanadium (V)-Total			98.0		%		80-120	14-SEP-20
Zinc (Zn)-Total			104.4		%		80-120	14-SEP-20
Zirconium (Zr)-Total			99.6		%		80-120	14-SEP-20
WG3403461-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	14-SEP-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	14-SEP-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	14-SEP-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	14-SEP-20
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	14-SEP-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	14-SEP-20
Boron (B)-Total			<0.010		mg/L		0.01	14-SEP-20
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	14-SEP-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	14-SEP-20
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	14-SEP-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	14-SEP-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	14-SEP-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	14-SEP-20
Iron (Fe)-Total			<0.010		mg/L		0.01	14-SEP-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	14-SEP-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	14-SEP-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	14-SEP-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	14-SEP-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	**Water**							
Batch R5223324								
WG3403461-1 MB								
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	14-SEP-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	14-SEP-20
Phosphorus (P)-Total			<0.050		mg/L		0.05	14-SEP-20
Potassium (K)-Total			<0.050		mg/L		0.05	14-SEP-20
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	14-SEP-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	14-SEP-20
Silicon (Si)-Total			<0.10		mg/L		0.1	14-SEP-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	14-SEP-20
Sodium (Na)-Total			<0.050		mg/L		0.05	14-SEP-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	14-SEP-20
Sulfur (S)-Total			<0.50		mg/L		0.5	14-SEP-20
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	14-SEP-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	14-SEP-20
Thorium (Th)-Total			<0.00010		mg/L		0.0001	14-SEP-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	14-SEP-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	14-SEP-20
Tungsten (W)-Total			<0.00010		mg/L		0.0001	14-SEP-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	14-SEP-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	14-SEP-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	14-SEP-20
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	14-SEP-20
NH3-F-VA	**Water**							
Batch R5222737								
WG3400424-2 LCS								
Ammonia, Total (as N)			98.8		%		85-115	12-SEP-20
WG3400424-1 MB								
Ammonia, Total (as N)			<0.0050		mg/L		0.005	12-SEP-20
NO2-L-IC-N-VA	**Water**							
Batch R5211117								
WG3398152-2 LCS								
Nitrite (as N)			95.1		%		90-110	04-SEP-20
WG3398152-1 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	04-SEP-20
NO3-L-IC-N-VA	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-VA	**Water**							
Batch R5211117								
WG3398152-2 LCS								
Nitrate (as N)			101.7		%		90-110	04-SEP-20
WG3398152-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	04-SEP-20
P-T-PRES-COL-VA	**Water**							
Batch R5220316								
WG3400435-2 LCS								
Phosphorus (P)-Total			96.9		%		80-120	09-SEP-20
WG3400435-1 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	09-SEP-20
PH-PCT-VA	**Water**							
Batch R5210648								
WG3398154-2 CRM		**VA-PH7-BUF**						
pH			7.01		pH		6.9-7.1	04-SEP-20
PO4-DO-COL-VA	**Water**							
Batch R5210184								
WG3398159-2 CRM		**VA-OPO4-CONTROL**						
Orthophosphate-Dissolved (as P)			100.1		%		80-120	04-SEP-20
WG3398159-1 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	04-SEP-20
SO4-IC-N-VA	**Water**							
Batch R5211117								
WG3398152-2 LCS								
Sulfate (SO4)			102.9		%		90-110	04-SEP-20
WG3398152-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	04-SEP-20
TDS-VA	**Water**							
Batch R5214505								
WG3398448-5 LCS								
Total Dissolved Solids			105.5		%		85-115	04-SEP-20
WG3398448-4 MB								
Total Dissolved Solids			<10		mg/L		10	04-SEP-20
TSS-VA	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-VA	**Water**							
Batch R5212123								
WG3398445-2 LCS								
Total Suspended Solids			98.3		%		85-115	04-SEP-20
WG3398445-1 MB								
Total Suspended Solids			<3.0		mg/L		3	04-SEP-20
TURBIDITY-VA	**Water**							
Batch R5216157								
WG3400140-2 CRM		**VA-FORM-40**						
Turbidity			100.5		%		85-115	08-SEP-20
WG3400140-1 MB								
Turbidity			<0.10		NTU		0.1	08-SEP-20

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Turbidity by Meter							
	1	30-AUG-20 19:00	08-SEP-20 16:00	3	9	days	EHT
pH by Meter (Automated)							
	1	30-AUG-20 19:00	05-SEP-20 11:25	0.25	136	hours	EHTR-FM
Anions and Nutrients							
Diss. Orthophosphate in Water by Colour							
	1	30-AUG-20 19:00	04-SEP-20 05:00	3	4	days	EHT
Nitrate in Water by IC (Low Level)							
	1	30-AUG-20 19:00	04-SEP-20 06:38	3	4	days	EHT
Nitrite in Water by IC (Low Level)							
	1	30-AUG-20 19:00	04-SEP-20 06:38	3	4	days	EHT

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2496996 were received on 31-AUG-20 16:15.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 17 - 817715

Page of

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)
Company:	SABINA GOLD & SILVER	Select Report Format: PDF EXCEL EDD (DIGITAL)	Regular [R]: Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	MERLE KEEFE	Quality Control (QC) Report with Report: YES NO	PRIORITY (Business Days): 4 day [P4-20%]; 3 day [P3-25%]; 2 day [P2-50%]
Phone:	604 240 6619	Compare Results to Criteria on Report - provide details below if box checked	EMERGENCY: 1 Business day [E - 100%]; Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)]
	Company address below will appear on the final report	Select Distribution: EMAIL MAIL FAX	
Street:	555 BURRARD STREET	Email 1 or Fax: MKEEFE@SABINAGOLD	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
City/Province:	VANCOUVER / BC	Email 2: SILVER.COM	For tests that can not be performed according to the service level selected, you will be contacted.
Postal Code:	V6G 2E5	Email 3:	

Invoice To		Invoice Distribution	
	Same as Report To: YES NO	Select Invoice Distribution: EMAIL MAIL FAX	
	Copy of Invoice with Report: YES NO	Email 1 or Fax: ACCOUNTSPAYABLE@SABINA	
Company:		Email 2: GOLDSILVER.COM	
Contact:			

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q81857	AFE/Cost Center:	PO#:
Job #:	PARAMETER LIST D	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): L2496996. ALS Contact: Sampler:

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	ROUTINE	Total Nutrients	Cyanides	Metals + Mercury	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	MLA LAKE 3	30-AUG-20	19:00	H_2O	5	X	X	X	X		

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? YES NO	
Are samples for human consumption/ use? YES NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen		SIF Observations	Yes	No	
Ice Packs	Ice Cubes	Custody seal intact	Yes	No	
Cooling Initiated					

INITIAL COOLER TEMPERATURES °C		FINAL COOLER TEMPERATURES °C	
6.3	7.2		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
			MA	Aug 31/20	16:15			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

GENERAL TERMS AND CONDITIONS:

These terms and conditions are incorporated in and form part of the Agreement between ALS Group's Environmental Division and the party named in the Offer (the "Client").

1. Definitions. Capitalized Terms not defined in these Terms and Conditions have the definitions set out in the other Agreement documents.
2. The Services. ALS will provide the Services to the Client as described in the Offer and in any chain of custody form provided with any sample.
3. Prices. ALS may review and change all prices, fees, surcharges or other charges set out in the Agreement if there are changes to ALS's cost beyond ALS's control, including changes in legislative requirements, Client variations of sample numbers and Client requests for changes to standard reporting requirements. Notwithstanding Condition 3, all quotations expire after three years.
4. Payment Terms. The Client shall pay ALS within 30 days of the invoice date OAC. ALS may, for reasonable business reasons, require the Client to arrange for payment in advance.
5. Quotation Numbers. The Client shall provide the quotation number to ALS (where applicable) to ensure correct pricing.
6. Taxes. Applicable taxes are not included in prices. Applicable surcharges and additional fees will be added at the time of invoicing.
7. Quality Control. ALS has an extensive QA/QC program. Clients' samples are analyzed using approved, referenced procedures followed by thorough data validation prior to reporting of the analytical results.
8. Test Results. Results are obtained from analytical measurements that are subject to inherent variability. Measurement results reflect characteristics of submitted test samples at time of analysis. The Client is responsible for informing itself on the limitation of test results and acknowledges that test results are not guaranteed. When statements of conformity are requested on test reports (e.g. within Criteria Reports), measurement uncertainty is not applied to test results prior to the evaluation.
9. Standard of Care. ALS will use reasonable care and diligence as required by the laws of the province or territory where the sample is tested.
10. Storage. Where possible, ALS will store; soil and water samples for 45 days from date of receipt, tissue/biota samples for 6 months from date of receipt, air samples or re-usable media for 14 days from date of receipt, and microbiological samples for 3 days from date of receipt.
11. Holds. If the Client requests a sample to be placed on hold, ALS will store the samples according to paragraph 10, after which ALS will invoice the Client and discard the sample. Each sample is subject to a minimum $5.00 hold fee. Longer hold periods are available upon request. See paragraph 12.
12. Archives. If the Client requests a sample be archived, ALS will invoice in advance and store the sample for the period requested, after which ALS may discard the sample.
13. Legal Sample Handling Protocol. Legal sample handling protocol must be arranged before samples are collected. ALS charges a surcharge on the list price plus the hourly technologist or chemist rates for legal sample protocol. Additional charges will apply for samples that require storage by ALS.
14. Samples. The quality, condition, content and source of samples stored and tested are not known to ALS except as declared and described on the chain of custody form completed and submitted by the Client and accompanying the sample.
15. Risk of Loss. ALS will use reasonable care to protect samples during storage, however all samples are stored at the Client's risk and the Client is responsible for obtaining appropriate insurance, if desired. The Client acknowledges that during the performance of the Services samples may be altered, lost, damaged, or destroyed and the Client releases ALS from any claim the Client may have for any loss or damage to the sample.
16. Environmental. The Client must comply with all applicable environment legislation, including labeling all hazardous samples to comply with GHS and TDG regulations, and must provide appropriate Safety Data that include the nature of the hazard and a contact name and phone number to call for information. The Client will indemnify ALS for all loss or damages, including any fine or cost of complying with an order of any government authority, resulting from the Client's breach of this paragraph.
17. Hazardous Materials Disposal. ALS may return, at the Client's cost, hazardous material to the Client for disposal.
18. Hazardous Materials Surcharge. ALS may apply an additional surcharge for handling of hazardous samples or samples with Naturally Occurring Radioactive Materials (NORM), H2S, CN, etc.
19. Sample Containers. ALS may ship sample containers to the Client's location by the most cost effective means using ALS preferred courier suppliers, within the specified project timeline.
20. Additional Charges. ALS may charge the Client (a) its cost for emergency bottle shipments and shipments to and from a remote site, and (b) where pick up and delivery services are provided, subject in each instance to a minimum charge of $25.00.
21. Re-Tests. ALS reserves the right to re-test any samples that remain in its possession. Re-tests requested by the Client may be subject to charges.
22. Waiver. The Client is responsible for making any assessment regarding the suitability of the Services and the intended results for the Client's purposes and waives any claims against ALS it may have as a result of the interpretation of the results. The Client shall indemnify ALS for all claims made by any third party against ALS in respect of all losses however arising from the performance of the Services or the use of any report provided in the performance of the Services.
23. Limitation of Liability. In no event shall ALS be liable for any consequential, indirect, incidental, special, exemplary, or punitive damages, whether foreseeable or unforeseeable (including claims for loss of profits or revenue or losses caused by stoppage of other work or impairment of other assets), incurred by the Client arising out of breach or failure of express or implied warranty, breach of contract, breach of warranty, misrepresentation, negligence, strict liability in tort or otherwise. In any event, the liability of ALS to the Client shall be limited to the cost of testing the sample as requested in the chain of custody form under which the sample was originally deposited. For the purposes of this paragraph and paragraphs 23, 15, 16, 22 and 24, as applicable, "ALS" includes without limitations its directors, officers, employees and affiliates and the "Client" includes without limitation any third party that may have a claim against ALS through the Client.
24. Notice of Liability. Notwithstanding paragraph 23, ALS shall not be liable to the Client unless the Client provides notice in writing to ALS of such loss or damage, together with full particulars thereof, within 30 days of the Client's receipt of the report of the analysis of the sample giving rise to such liability. The provisions of this paragraph allocate the risk under the Agreement between the Client and ALS, and the fees to be paid by the Client to ALS reflect this allocation of risks and the limitations of liability in this Agreement.
25. Third Party Service Provider Indemnity. For testing not performed at ALS, and where the Client requires ALS to forward samples to a third party service provider, the Client indemnifies ALS against any breach of this Agreement, all liabilities or losses incurred in connection with the third party service provider, including but not limited to courier services, testing turn-around time, and any additional costs associated with such third party.
26. Third Party Service Provider Indemnity. If ALS is required to engage a third party service provider for whatever reason, the Client indemnifies ALS against any breach of this Agreement, liabilities, or losses incurred in connection with the third party service provider, including but not limited to courier services, testing turn-around time, and any additional costs associated with such third party.
27. Entire Agreement. The Agreement is the entire agreement between the parties and supersedes and takes precedence over any terms and conditions contained in any documentation provided by the Client. ALS's execution of any subsequent documentation from the Client only acknowledges receipt and not acceptance of any terms or conditions therein. If there is a conflict between these terms and conditions and any other Agreement document, these terms and conditions prevail.
28. Term. Providing the first batch of samples to which this tender refers is submitted within three months of the starting date of this quotation, the following prices, terms and conditions will remain firm until the closing date. This offer, and its terms and conditions will automatically lapse if the offer has not been accepted and samples not delivered to ALS by the Closing Date.
29. Termination. (a) Either party may terminate this Agreement for any reason by giving the other party thirty (30) days written notice (Notice Period). (b) If the Agreement is terminated pursuant to clause (a), then the Client must pay ALS for all Services performed up to the expiry of the Notice Period.

SABINA GOLD & SILVER CORP.
ATTN: Merle Keefe
Suite 1800 - 555 Burrard St.
Box 220
Vancouver BC V7X 1M7

Date Received: 08-SEP-20
Report Date: 21-SEP-20 17:24 (MT)
Version: FINAL

Client Phone: 604-240-6619

Certificate of Analysis

Lab Work Order #: L2499771

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: 17-817642
Legal Site Desc:

Oliver Gregg
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2499771-1				
	Description	WATER				
	Sampled Date	04-SEP-20				
	Sampled Time	15:30				
	Client ID	GOO LAKE				
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	44.0				
	Hardness (as CaCO3) (mg/L)	17.0				
	pH (pH)	6.85				
	Total Suspended Solids (mg/L)	<3.0				
	Total Dissolved Solids (mg/L)	46				
	TDS (Calculated) (mg/L)	21.3				
	Turbidity (NTU)	0.61				
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	5.1				
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0				
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0				
	Alkalinity, Phenolphthalein (as CaCO3) (mg/L)	<2.0				
	Alkalinity, Total (as CaCO3) (mg/L)	5.1				
	Ammonia, Total (as N) (mg/L)	0.0099				
	Bromide (Br) (mg/L)	<0.050				
	Chloride (Cl) (mg/L)	2.95				
	Fluoride (F) (mg/L)	0.029				
	Nitrate and Nitrite (as N) (mg/L)	0.0160				
	Nitrate (as N) (mg/L)	0.0160				
	Nitrite (as N) (mg/L)	<0.0010				
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010				
	Phosphorus (P)-Total (mg/L)	<0.0020				
	Sulfate (SO4) (mg/L)	8.33				
	Anion Sum (meq/L)	0.36				
	Cation Sum (meq/L)	0.39				
	Cation - Anion Balance (%)	4.4				
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0050				
	Cyanide, Total (mg/L)	<0.0050				
	Cyanide, Free (mg/L)	<0.0050				
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	5.71				
Total Metals	Aluminum (Al)-Total (mg/L)	0.0315				
	Antimony (Sb)-Total (mg/L)	<0.00010				
	Arsenic (As)-Total (mg/L)	0.00034				
	Barium (Ba)-Total (mg/L)	0.00635				
	Beryllium (Be)-Total (mg/L)	<0.00010				
	Bismuth (Bi)-Total (mg/L)	<0.000050				
	Boron (B)-Total (mg/L)	<0.010				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2499771-1				
	Description	WATER				
	Sampled Date	04-SEP-20				
	Sampled Time	15:30				
	Client ID	GOO LAKE				
Grouping	**Analyte**					
WATER						
Total Metals	Cadmium (Cd)-Total (mg/L)	0.0000099				
	Calcium (Ca)-Total (mg/L)	3.23				
	Cesium (Cs)-Total (mg/L)	<0.000010				
	Chromium (Cr)-Total (mg/L)	0.00017				
	Cobalt (Co)-Total (mg/L)	0.00024				
	Copper (Cu)-Total (mg/L)	0.00220				
	Iron (Fe)-Total (mg/L)	0.081				
	Lead (Pb)-Total (mg/L)	<0.000050				
	Lithium (Li)-Total (mg/L)	<0.0010				
	Magnesium (Mg)-Total (mg/L)	2.01				
	Manganese (Mn)-Total (mg/L)	0.00340				
	Mercury (Hg)-Total (mg/L)	<0.0000050				
	Molybdenum (Mo)-Total (mg/L)	<0.000050				
	Nickel (Ni)-Total (mg/L)	0.00493				
	Phosphorus (P)-Total (mg/L)	<0.050				
	Potassium (K)-Total (mg/L)	0.381				
	Rubidium (Rb)-Total (mg/L)	0.00089				
	Selenium (Se)-Total (mg/L)	<0.000050				
	Silicon (Si)-Total (mg/L)	0.61				
	Silver (Ag)-Total (mg/L)	<0.000010				
	Sodium (Na)-Total (mg/L)	0.742				
	Strontium (Sr)-Total (mg/L)	0.0151				
	Sulfur (S)-Total (mg/L)	2.91				
	Tellurium (Te)-Total (mg/L)	<0.00020				
	Thallium (Tl)-Total (mg/L)	<0.000010				
	Thorium (Th)-Total (mg/L)	<0.00010				
	Tin (Sn)-Total (mg/L)	<0.00010				
	Titanium (Ti)-Total (mg/L)	0.00042				
	Tungsten (W)-Total (mg/L)	<0.00010				
	Uranium (U)-Total (mg/L)	0.000011				
	Vanadium (V)-Total (mg/L)	<0.00050				
	Zinc (Zn)-Total (mg/L)	<0.0030				
	Zirconium (Zr)-Total (mg/L)	<0.00020				
Dissolved Metals	Dissolved Mercury Filtration Location	LAB				
	Dissolved Metals Filtration Location	LAB				
	Aluminum (Al)-Dissolved (mg/L)	0.0184				
	Antimony (Sb)-Dissolved (mg/L)	<0.00010				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2499771-1				
	Description	WATER				
	Sampled Date	04-SEP-20				
	Sampled Time	15:30				
	Client ID	GOO LAKE				
Grouping	**Analyte**					
WATER						
Dissolved Metals	Arsenic (As)-Dissolved (mg/L)	0.00029				
	Barium (Ba)-Dissolved (mg/L)	0.00658				
	Beryllium (Be)-Dissolved (mg/L)	<0.00010				
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050				
	Boron (B)-Dissolved (mg/L)	<0.010				
	Cadmium (Cd)-Dissolved (mg/L)	0.0000147				
	Calcium (Ca)-Dissolved (mg/L)	3.32				
	Cesium (Cs)-Dissolved (mg/L)	<0.000010				
	Chromium (Cr)-Dissolved (mg/L)	0.00011				
	Cobalt (Co)-Dissolved (mg/L)	0.00016				
	Copper (Cu)-Dissolved (mg/L)	0.00213				
	Iron (Fe)-Dissolved (mg/L)	0.017				
	Lead (Pb)-Dissolved (mg/L)	<0.000050				
	Lithium (Li)-Dissolved (mg/L)	<0.0010				
	Magnesium (Mg)-Dissolved (mg/L)	2.12				
	Manganese (Mn)-Dissolved (mg/L)	0.00160				
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050				
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050				
	Nickel (Ni)-Dissolved (mg/L)	0.00478				
	Phosphorus (P)-Dissolved (mg/L)	<0.050				
	Potassium (K)-Dissolved (mg/L)	0.466				
	Rubidium (Rb)-Dissolved (mg/L)	0.00094				
	Selenium (Se)-Dissolved (mg/L)	<0.000050				
	Silicon (Si)-Dissolved (mg/L)	0.577				
	Silver (Ag)-Dissolved (mg/L)	<0.000010				
	Sodium (Na)-Dissolved (mg/L)	0.875				
	Strontium (Sr)-Dissolved (mg/L)	0.0163				
	Sulfur (S)-Dissolved (mg/L)	2.66				
	Tellurium (Te)-Dissolved (mg/L)	<0.00020				
	Thallium (Tl)-Dissolved (mg/L)	<0.000010				
	Thorium (Th)-Dissolved (mg/L)	<0.00010				
	Tin (Sn)-Dissolved (mg/L)	0.00011				
	Titanium (Ti)-Dissolved (mg/L)	<0.00030				
	Tungsten (W)-Dissolved (mg/L)	<0.00010				
	Uranium (U)-Dissolved (mg/L)	<0.000010				
	Vanadium (V)-Dissolved (mg/L)	<0.00050				
	Zinc (Zn)-Dissolved (mg/L)	0.0053				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2499771-1				
Description	WATER				
Sampled Date	04-SEP-20				
Sampled Time	15:30				
Client ID	GOO LAKE				
Grouping **Analyte**					
WATER					
Dissolved Metals Zirconium (Zr)-Dissolved (mg/L)	<0.00020				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Sample Submission Listed:

Qualifier	Description
WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Alkalinity, Total (as CaCO3)	B	L2499771-1
Laboratory Control Sample	Strontium (Sr)-Dissolved	MES	L2499771-1
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2499771-1
Matrix Spike	Boron (B)-Dissolved	MS-B	L2499771-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2499771-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2499771-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2499771-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2499771-1
Matrix Spike	Rubidium (Rb)-Dissolved	MS-B	L2499771-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2499771-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2499771-1
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2499771-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2499771-1
Matrix Spike	Phosphorus (P)-Total	MS-B	L2499771-1
Matrix Spike	Orthophosphate-Dissolved (as P)	MS-B	L2499771-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-TITR-VA	Water	Alkalinity Species by Titration	APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

ANIONS-N+N-CALC-VA	Water	Nitrite & Nitrate in Water (Calculation)	EPA 300.0

Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

BR-L-IC-N-VA	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CARBONS-DOC-VA	Water	Dissolved organic carbon by combustion	APHA 5310B

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CL-IC-N-VA	Water	Chloride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CN-FREE-CFA-VA	Water	Free Cyanide in water by CFA	ASTM 7237

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

CN-T-CFA-VA	Water	Total Cyanide in water by CFA	ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

CN-WAD-CFA-VA	Water	Weak Acid Diss. Cyanide in water by CFA	APHA 4500-CN CYANIDE

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

EC-SCREEN-VA Water Conductivity Screen (Internal Use Only) APHA 2510

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

F-IC-N-VA Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-VA Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-PRES-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.
Samples with very high dissolved solids (i.e. seawaters, brackish waters) may produce a negative bias by this method. Alternate methods are available for these types of samples.

Arsenic (5+), at elevated levels, is a positive interference on colourimetric phosphate analysis.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

Reference Information

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.
Samples with very high dissolved solids (i.e. seawaters, brackish waters) may produce a negative bias by this method. Alternate methods are available for these types of samples.

Arsenic (5+), at elevated levels, is a positive interference on colourimetric phosphate analysis.

SO4-IC-N-VA Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

TDS-CALC-VA Water TDS (Calculated) APHA 1030E (20TH EDITION)

This analysis is carried out using procedures adapted from APHA 1030E "Checking Correctness of Analyses".
The Total Dissolved Solids result is calculated from measured concentrations of anions and cations in the sample.

TDS-VA Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-VA Water Total Suspended Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.
Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

17-817642

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: SABINA GOLD & SILVER CORP.
Suite 1800 - 555 Burrard St. Box 220
Vancouver BC V7X 1M7
Contact: Merle Keefe

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-VA	**Water**							
Batch R5223094								
WG3403137-3 LCS								
Alkalinity, Total (as CaCO3)			95.6		%		85-115	12-SEP-20
Alkalinity, Phenolphthalein (as CaCO3)			96.9		%		75-125	12-SEP-20
WG3403137-1 MB								
Alkalinity, Total (as CaCO3)			1.2	B	mg/L		1	12-SEP-20
Alkalinity, Phenolphthalein (as CaCO3)			<2.0		mg/L		2	12-SEP-20
BR-L-IC-N-VA	**Water**							
Batch R5223349								
WG3403134-2 LCS								
Bromide (Br)			102.0		%		85-115	12-SEP-20
WG3403134-1 MB								
Bromide (Br)			<0.050		mg/L		0.05	12-SEP-20
CARBONS-DOC-VA	**Water**							
Batch R5222930								
WG3403124-2 LCS								
Dissolved Organic Carbon			106.2		%		80-120	12-SEP-20
WG3403124-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	12-SEP-20
CL-IC-N-VA	**Water**							
Batch R5223349								
WG3403134-2 LCS								
Chloride (Cl)			100.3		%		90-110	12-SEP-20
WG3403134-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	12-SEP-20
CN-FREE-CFA-VA	**Water**							
Batch R5224750								
WG3405026-2 LCS								
Cyanide, Free			94.9		%		80-120	15-SEP-20
WG3405026-1 MB								
Cyanide, Free			<0.0050		mg/L		0.005	15-SEP-20
CN-T-CFA-VA	**Water**							
Batch R5224750								
WG3405026-2 LCS								
Cyanide, Total			92.6		%		80-120	15-SEP-20
WG3405026-1 MB								
Cyanide, Total			<0.0050		mg/L		0.005	15-SEP-20
CN-WAD-CFA-VA	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CN-WAD-CFA-VA	**Water**							
Batch R5223526								
WG3403844-7 LCS								
Cyanide, Weak Acid Diss			100.0		%		80-120	14-SEP-20
WG3403844-6 MB								
Cyanide, Weak Acid Diss			<0.0050		mg/L		0.005	14-SEP-20
EC-PCT-VA	**Water**							
Batch R5223094								
WG3403137-3 LCS								
Conductivity			98.2		%		90-110	12-SEP-20
WG3403137-1 MB								
Conductivity			<2.0		uS/cm		2	12-SEP-20
F-IC-N-VA	**Water**							
Batch R5223349								
WG3403134-2 LCS								
Fluoride (F)			99.5		%		90-110	12-SEP-20
WG3403134-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	12-SEP-20
HG-D-CVAA-VA	**Water**							
Batch R5231716								
WG3408879-3 DUP		**L2499771-1**						
Mercury (Hg)-Dissolved		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	21-SEP-20
WG3408879-2 LCS								
Mercury (Hg)-Dissolved			98.9		%		80-120	21-SEP-20
WG3408879-1 MB		**LF**						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	21-SEP-20
HG-T-CVAA-VA	**Water**							
Batch R5224367								
WG3405400-2 LCS								
Mercury (Hg)-Total			96.4		%		80-120	16-SEP-20
WG3405400-1 MB								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	16-SEP-20
WG3405400-7 MS		**L2499771-1**						
Mercury (Hg)-Total			95.3		%		70-130	16-SEP-20
MET-D-CCMS-VA	**Water**							
Batch R5223444								
WG3403026-6 LCS								
Aluminum (Al)-Dissolved			101.4		%		80-120	11-SEP-20
Antimony (Sb)-Dissolved			98.1		%		80-120	11-SEP-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	**Water**							
Batch R5223444								
WG3403026-6 LCS								
Arsenic (As)-Dissolved			101.0		%		80-120	11-SEP-20
Barium (Ba)-Dissolved			97.7		%		80-120	11-SEP-20
Beryllium (Be)-Dissolved			102.2		%		80-120	11-SEP-20
Bismuth (Bi)-Dissolved			103.2		%		80-120	11-SEP-20
Boron (B)-Dissolved			107.3		%		80-120	11-SEP-20
Cadmium (Cd)-Dissolved			100.0		%		80-120	11-SEP-20
Calcium (Ca)-Dissolved			103.1		%		80-120	11-SEP-20
Cesium (Cs)-Dissolved			99.5		%		80-120	11-SEP-20
Chromium (Cr)-Dissolved			102.4		%		80-120	11-SEP-20
Cobalt (Co)-Dissolved			101.1		%		80-120	11-SEP-20
Copper (Cu)-Dissolved			100.5		%		80-120	11-SEP-20
Iron (Fe)-Dissolved			100.4		%		80-120	11-SEP-20
Lead (Pb)-Dissolved			101.2		%		80-120	11-SEP-20
Lithium (Li)-Dissolved			103.6		%		80-120	11-SEP-20
Magnesium (Mg)-Dissolved			101.9		%		80-120	11-SEP-20
Manganese (Mn)-Dissolved			102.7		%		80-120	11-SEP-20
Molybdenum (Mo)-Dissolved			97.1		%		80-120	11-SEP-20
Nickel (Ni)-Dissolved			99.7		%		80-120	11-SEP-20
Phosphorus (P)-Dissolved			110.0		%		70-130	11-SEP-20
Potassium (K)-Dissolved			101.4		%		80-120	11-SEP-20
Rubidium (Rb)-Dissolved			101.6		%		80-120	11-SEP-20
Selenium (Se)-Dissolved			95.4		%		80-120	11-SEP-20
Silicon (Si)-Dissolved			99.0		%		60-140	11-SEP-20
Silver (Ag)-Dissolved			99.2		%		80-120	11-SEP-20
Sodium (Na)-Dissolved			112.5		%		80-120	11-SEP-20
Strontium (Sr)-Dissolved			124.9	MES	%		80-120	11-SEP-20
Sulfur (S)-Dissolved			96.5		%		80-120	11-SEP-20
Tellurium (Te)-Dissolved			100.1		%		80-120	11-SEP-20
Thallium (Tl)-Dissolved			101.0		%		80-120	11-SEP-20
Thorium (Th)-Dissolved			95.5		%		80-120	11-SEP-20
Tin (Sn)-Dissolved			98.1		%		80-120	11-SEP-20
Titanium (Ti)-Dissolved			93.5		%		80-120	11-SEP-20
Tungsten (W)-Dissolved			101.7		%		80-120	11-SEP-20
Uranium (U)-Dissolved			112.5		%		80-120	11-SEP-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	**Water**							
Batch R5223444								
WG3403026-6 LCS								
Vanadium (V)-Dissolved			101.1		%		80-120	11-SEP-20
Zinc (Zn)-Dissolved			98.3		%		80-120	11-SEP-20
Zirconium (Zr)-Dissolved			100.8		%		80-120	11-SEP-20
WG3403026-5 MB		**LF**						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	11-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	11-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	11-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	11-SEP-20
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	11-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	11-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	11-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	11-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	11-SEP-20
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	11-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	11-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	11-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	11-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	11-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	11-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	11-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	11-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	11-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	11-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	11-SEP-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	11-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	11-SEP-20
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	11-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	11-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	11-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	11-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	11-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	11-SEP-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	11-SEP-20
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	11-SEP-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA	**Water**							
Batch R5223444								
WG3403026-5 MB		**LF**						
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	11-SEP-20
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	11-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	11-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	11-SEP-20
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	11-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	11-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	11-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	11-SEP-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	11-SEP-20
MET-T-CCMS-VA	**Water**							
Batch R5224745								
WG3404956-2 LCS								
Aluminum (Al)-Total			107.1		%		80-120	16-SEP-20
Antimony (Sb)-Total			103.7		%		80-120	16-SEP-20
Arsenic (As)-Total			101.2		%		80-120	16-SEP-20
Barium (Ba)-Total			102.2		%		80-120	16-SEP-20
Beryllium (Be)-Total			100.9		%		80-120	16-SEP-20
Bismuth (Bi)-Total			97.6		%		80-120	16-SEP-20
Boron (B)-Total			106.3		%		80-120	16-SEP-20
Cadmium (Cd)-Total			101.6		%		80-120	16-SEP-20
Calcium (Ca)-Total			99.2		%		80-120	16-SEP-20
Cesium (Cs)-Total			101.8		%		80-120	16-SEP-20
Chromium (Cr)-Total			106.1		%		80-120	16-SEP-20
Cobalt (Co)-Total			101.9		%		80-120	16-SEP-20
Copper (Cu)-Total			102.9		%		80-120	16-SEP-20
Iron (Fe)-Total			108.3		%		80-120	16-SEP-20
Lead (Pb)-Total			100.2		%		80-120	16-SEP-20
Lithium (Li)-Total			105.3		%		80-120	16-SEP-20
Magnesium (Mg)-Total			104.4		%		80-120	16-SEP-20
Manganese (Mn)-Total			105.4		%		80-120	16-SEP-20
Molybdenum (Mo)-Total			102.1		%		80-120	16-SEP-20
Nickel (Ni)-Total			102.0		%		80-120	16-SEP-20
Phosphorus (P)-Total			107.9		%		80-120	16-SEP-20
Potassium (K)-Total			110.9		%		80-120	16-SEP-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	**Water**							
Batch R5224745								
WG3404956-2 LCS								
Rubidium (Rb)-Total			101.2		%		80-120	16-SEP-20
Selenium (Se)-Total			97.8		%		80-120	16-SEP-20
Silicon (Si)-Total			105.1		%		80-120	16-SEP-20
Silver (Ag)-Total			102.2		%		80-120	16-SEP-20
Sodium (Na)-Total			105.2		%		80-120	16-SEP-20
Strontium (Sr)-Total			105.1		%		80-120	16-SEP-20
Sulfur (S)-Total			97.5		%		80-120	16-SEP-20
Tellurium (Te)-Total			93.0		%		80-120	16-SEP-20
Thallium (Tl)-Total			99.5		%		80-120	16-SEP-20
Thorium (Th)-Total			95.8		%		80-120	16-SEP-20
Tin (Sn)-Total			102.7		%		80-120	16-SEP-20
Titanium (Ti)-Total			99.97		%		80-120	16-SEP-20
Tungsten (W)-Total			101.6		%		80-120	16-SEP-20
Uranium (U)-Total			104.1		%		80-120	16-SEP-20
Vanadium (V)-Total			105.8		%		80-120	16-SEP-20
Zinc (Zn)-Total			105.5		%		80-120	16-SEP-20
Zirconium (Zr)-Total			100.7		%		80-120	16-SEP-20
WG3404956-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	16-SEP-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	16-SEP-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	16-SEP-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	16-SEP-20
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	16-SEP-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	16-SEP-20
Boron (B)-Total			<0.010		mg/L		0.01	16-SEP-20
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	16-SEP-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	16-SEP-20
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	16-SEP-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	16-SEP-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	16-SEP-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	16-SEP-20
Iron (Fe)-Total			<0.010		mg/L		0.01	16-SEP-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	16-SEP-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	16-SEP-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	**Water**							
Batch R5224745								
WG3404956-1 MB								
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	16-SEP-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	16-SEP-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	16-SEP-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	16-SEP-20
Phosphorus (P)-Total			<0.050		mg/L		0.05	16-SEP-20
Potassium (K)-Total			<0.050		mg/L		0.05	16-SEP-20
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	16-SEP-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	16-SEP-20
Silicon (Si)-Total			<0.10		mg/L		0.1	16-SEP-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	16-SEP-20
Sodium (Na)-Total			<0.050		mg/L		0.05	16-SEP-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	16-SEP-20
Sulfur (S)-Total			<0.50		mg/L		0.5	16-SEP-20
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	16-SEP-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	16-SEP-20
Thorium (Th)-Total			<0.00010		mg/L		0.0001	16-SEP-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	16-SEP-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	16-SEP-20
Tungsten (W)-Total			<0.00010		mg/L		0.0001	16-SEP-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	16-SEP-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	16-SEP-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	16-SEP-20
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	16-SEP-20
NH3-F-VA	**Water**							
Batch R5231164								
WG3408300-3 DUP		**L2499771-1**						
Ammonia, Total (as N)		0.0099	0.0100		mg/L	1.2	20	20-SEP-20
WG3408300-2 LCS								
Ammonia, Total (as N)			93.6		%		85-115	20-SEP-20
WG3408300-1 MB								
Ammonia, Total (as N)			<0.0050		mg/L		0.005	20-SEP-20
NO2-L-IC-N-VA	**Water**							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-VA	**Water**							
Batch R5223349								
WG3403134-2 LCS								
Nitrite (as N)			99.6		%		90-110	12-SEP-20
WG3403134-1 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	12-SEP-20
NO3-L-IC-N-VA	**Water**							
Batch R5223349								
WG3403134-2 LCS								
Nitrate (as N)			100.6		%		90-110	12-SEP-20
WG3403134-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	12-SEP-20
P-T-PRES-COL-VA	**Water**							
Batch R5231524								
WG3408303-3 DUP		**L2499771-1**						
Phosphorus (P)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	21-SEP-20
WG3408303-2 LCS								
Phosphorus (P)-Total			95.3		%		80-120	21-SEP-20
WG3408303-1 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	21-SEP-20
PH-PCT-VA	**Water**							
Batch R5223094								
WG3403137-2 CRM		**VA-PH7-BUF**						
pH			7.01		pH		6.9-7.1	12-SEP-20
PO4-DO-COL-VA	**Water**							
Batch R5222522								
WG3403141-2 CRM		**VA-OPO4-CONTROL**						
Orthophosphate-Dissolved (as P)			105.6		%		80-120	12-SEP-20
WG3403141-1 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	12-SEP-20
SO4-IC-N-VA	**Water**							
Batch R5223349								
WG3403134-2 LCS								
Sulfate (SO4)			101.2		%		90-110	12-SEP-20
WG3403134-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	12-SEP-20
TDS-VA	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TDS-VA	**Water**							
Batch R5223271								
WG3402838-3 DUP		**L2499771-1**						
Total Dissolved Solids		46	42		mg/L	9.2	20	11-SEP-20
WG3402838-2 LCS								
Total Dissolved Solids			102.0		%		85-115	11-SEP-20
WG3402838-1 MB								
Total Dissolved Solids			<10		mg/L		10	11-SEP-20
TSS-VA	**Water**							
Batch R5223192								
WG3403095-3 DUP		**L2499771-1**						
Total Suspended Solids		<3.0	<3.0	RPD-NA	mg/L	N/A	20	11-SEP-20
WG3403095-2 LCS								
Total Suspended Solids			106.8		%		85-115	11-SEP-20
WG3403095-1 MB								
Total Suspended Solids			<3.0		mg/L		3	11-SEP-20
TURBIDITY-VA	**Water**							
Batch R5223451								
WG3404235-2 CRM		**VA-FORM-40**						
Turbidity			98.0		%		85-115	14-SEP-20
WG3404235-1 MB								
Turbidity			<0.10		NTU		0.1	14-SEP-20

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Turbidity by Meter							
	1	04-SEP-20 15:30	14-SEP-20 16:00	3	10	days	EHTR
pH by Meter (Automated)							
	1	04-SEP-20 15:30	12-SEP-20 09:44	0.25	186	hours	EHTR-FM
Anions and Nutrients							
Diss. Orthophosphate in Water by Colour							
	1	04-SEP-20 15:30	12-SEP-20 06:00	3	8	days	EHTR
Nitrate in Water by IC (Low Level)							
	1	04-SEP-20 15:30	12-SEP-20 08:09	3	8	days	EHTR
Nitrite in Water by IC (Low Level)							
	1	04-SEP-20 15:30	12-SEP-20 08:09	3	8	days	EHTR

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2499771 were received on 08-SEP-20 09:10.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 17 - 817642

Page of

Report To	Contact and company name below will appear on the final report
Company:	SABINA
Contact:	MERLE KEEFE
Phone:	604 240 6619
Company address below will appear on the final report	
Street:	~~925~~ BURRARD ST
City/Province:	VANCOUVER / BC
Postal Code:	V7X 1M7
Invoice To	Same as Report To [ ] YES [X] NO
	Copy of Invoice with Report [ ] YES [ ] NO
Company:	SABINA
Contact:	ACCOUNTSPAYABLE@SABINAGOLD SILVER.COM

Report Format / Distribution	
Select Report Format:	[X] PDF [X] EXCEL [ ] EDD (DIGITAL)
Quality Control (QC) Report with Report	[ ] YES [X] NO
[ ] Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	[X] EMAIL [ ] MAIL [ ] FAX
Email 1 or Fax	MKEEFE@SABINAGOLD SILVER.COM
Email 2	
Email 3	

Invoice Distribution	
Select Invoice Distribution:	[X] EMAIL [ ] MAIL [ ] FAX
Email 1 or Fax	
Email 2	

Project Information	
ALS Account # / Quote #:	Q81857
Job #:	
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)		
AFE/Cost Center:	PO#	
Major/Minor Code:	Routing Code:	
Requisitioner:		
Location:		

ALS Lab Work Order # (lab use only): L2499771

ALS Contact: Sampler:

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] [X] Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] [ ]; 3 day [P3-25%] [ ]; 2 day [P2-50%] [ ]

EMERGENCY: 1 Business day [E - 100%] [ ]; Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] [ ]

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	ROUTINE	Total Nutrients	CYANIDES	Metals & Hg Low Level	Mercury	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	GOO LAKE	04-SEP-20	15:30	H2O	6	X	X	X	X	X		

L2499771-COFC

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? [ ] YES [ ] NO

Are samples for human consumption/ use? [ ] YES [ ] NO

Special Instructions below

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen [ ] SIF Observations Yes [ ] No [ ]

Ice Packs [ ] Ice Cubes [ ] Custody seal intact Yes [ ] No [ ]

Cooling Initiated [ ]

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
5.5							

SHIPMENT RELEASE (client use)		
Released by:	Date:	Time:

INITIAL SHIPMENT RECEPTION (lab use only)		
Received by:	Date: 8 SEP 20	Time: 9:10

FINAL SHIPMENT RECEPTION (lab use only)		
Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

GENERAL TERMS AND CONDITIONS:

These terms and conditions are incorporated in and form part of the Agreement between ALS Group's Environmental Division and the party named in the Offer (the "Client").

1. Definitions. Capitalized Terms not defined in these Terms and Conditions have the definitions set out in the other Agreement documents.
2. The Services. ALS will provide the Services to the Client as described in the Offer and in any chain of custody form provided with any sample.
3. Prices. ALS may review and change all prices, fees, surcharges or other charges set out in the Agreement if there are changes to ALS's cost beyond ALS's control, including changes in legislative requirements, Client variations of sample numbers and Client requests for changes to standard reporting requirements. Notwithstanding Condition 3, all quotations expire after three years.
4. Payment Terms. The Client shall pay ALS within 30 days of the invoice date OAC. ALS may, for reasonable business reasons, require the Client to arrange for payment in advance.
5. Quotation Numbers. The Client shall provide the quotation number to ALS (where applicable) to ensure correct pricing.
6. Taxes. Applicable taxes are not included in prices. Applicable surcharges and additional fees will be added at the time of invoicing.
7. Quality Control. ALS has an extensive QA/QC program. Clients' samples are analyzed using approved, referenced procedures followed by thorough data validation prior to reporting of the analytical results.
8. Test Results. Results are obtained from analytical measurements that are subject to inherent variability. Measurement results reflect characteristics of submitted test samples at time of analysis. The Client is responsible for informing itself on the limitation of test results and acknowledges that test results are not guaranteed. When statements of conformity are requested on test reports (e.g. within Criteria Reports), measurement uncertainty is not applied to test results prior to the evaluation.
9. Standard of Care. ALS will use reasonable care and diligence as required by the laws of the province or territory where the sample is tested.
10. Storage. Where possible, ALS will store; soil and water samples for 45 days from date of receipt, tissue/biota samples for 6 months from date of receipt, air samples or re-usable media for 14 days from date of receipt, and microbiological samples for 3 days from date of receipt.
11. Holds. If the Client requests a sample to be placed on hold, ALS will store the samples according to paragraph 10, after which ALS will invoice the Client and discard the sample. Each sample is subject to a minimum $5.00 hold fee. Longer hold periods are available upon request. See paragraph 12.
12. Archives. If the Client requests a sample be archived, ALS will invoice in advance and store the sample for the period requested, after which ALS may discard the sample.
13. Legal Sample Handling Protocol. Legal sample handling protocol must be arranged before samples are collected. ALS charges a surcharge on the list price plus the hourly technologist or chemist rates for legal sample protocol. Additional charges will apply for samples that require storage by ALS.
14. Samples. The quality, condition, content and source of samples stored and tested are not known to ALS except as declared and described on the chain of custody form completed and submitted by the Client and accompanying the sample.
15. Risk of Loss. ALS will use reasonable care to protect samples during storage, however all samples are stored at the Client's risk and the Client is responsible for obtaining appropriate insurance, if desired. The Client acknowledges that during the performance of the Services samples may be altered, lost, damaged, or destroyed and the Client releases ALS from any claim the Client may have for any loss or damage to the sample.
16. Environmental. The Client must comply with all applicable environment legislation, including labeling all hazardous samples to comply with GHS and TDG regulations, and must provide appropriate Safety Data that include the nature of the hazard and a contact name and phone number to call for information. The Client will indemnify ALS for all loss or damages, including any fine or cost of complying with an order of any government authority, resulting from the Client's breach of this paragraph.
17. Hazardous Materials Disposal. ALS may return, at the Client's cost, hazardous material to the Client for disposal.
18. Hazardous Materials Surcharge. ALS may apply an additional surcharge for handling of hazardous samples or samples with Naturally Occurring Radioactive Materials (NORM), H2S, CN, etc.
19. Sample Containers. ALS may ship sample containers to the Client's location by the most cost effective means using ALS preferred courier suppliers, within the specified project timeline.
20. Additional Charges. ALS may charge the Client (a) its cost for emergency bottle shipments and shipments to and from a remote site, and (b) where pick up and delivery services are provided, subject in each instance to a minimum charge of $25.00.
21. Re-Tests. ALS reserves the right to re-test any samples that remain in its possession. Re-tests requested by the Client may be subject to charges.
22. Waiver. The Client is responsible for making any assessment regarding the suitability of the Services and the intended results for the Client's purposes and waives any claims against ALS it may have as a result of the interpretation of the results. The Client shall indemnify ALS for all claims made by any third party against ALS in respect of all losses however arising from the performance of the Services or the use of any report provided in the performance of the Services.
23. Limitation of Liability. In no event shall ALS be liable for any consequential, indirect, incidental, special, exemplary, or punitive damages, whether foreseeable or unforeseeable (including claims for loss of profits or revenue or losses caused by stoppage of other work or impairment of other assets), incurred by the Client arising out of breach or failure of express or implied warranty, breach of contract, breach of warranty, misrepresentation, negligence, strict liability in tort or otherwise. In any event, the liability of ALS to the Client shall be limited to the cost of testing the sample as requested in the chain of custody form under which the sample was originally deposited. For the purposes of this paragraph and paragraphs 8, 15, 16, 22 and 24, as applicable, "ALS" includes without limitations its directors, officers, employees and affiliates and the "Client" includes without limitation any third party that may have a claim against ALS through the Client.
24. Notice of Liability. Notwithstanding paragraph 23, ALS shall not be liable to the Client unless the Client provides notice in writing to ALS of such loss or damage, together with full particulars thereof, within 30 days of the Client's receipt of the report of the analysis of the sample giving rise to such liability. The provisions of this paragraph allocate the risk under the Agreement between the Client and ALS, and the fees to be paid by the Client to ALS reflect this allocation of risks and the limitations of liability in this Agreement.
25. Third Party Service Provider Indemnity. For testing not performed at ALS, and where the Client requires ALS to forward samples to a third party service provider, the Client indemnifies ALS against any breach of this Agreement, all liabilities or losses incurred in connection with the third party service provider, including but not limited to courier services, testing turn-around time, and any additional costs associated with such third party.
26. Third Party Service Provider Indemnity. If ALS is required to engage a third party service provider for whatever reason, the Client indemnifies ALS against any breach of this Agreement, liabilities, or losses incurred in connection with the third party service provider, including but not limited to courier services, testing turn-around time, and any additional costs associated with such third party.
27. Entire Agreement. The Agreement is the entire agreement between the parties and supersedes and takes precedence over any terms and conditions contained in any documentation provided by the Client. ALS's execution of any subsequent documentation from the Client only acknowledges receipt and not acceptance of any terms or conditions therein. If there is a conflict between these terms and conditions and any other Agreement document, these terms and conditions prevail.
28. Term. Providing the first batch of samples to which this tender refers is submitted within three months of the starting date of this quotation, the following prices, terms and conditions will remain firm until the closing date. This offer, and its terms and conditions will automatically lapse if the offer has not been accepted and samples not delivered to ALS by the Closing Date.
29. Termination. (a) Either party may terminate this Agreement for any reason by giving the other party thirty (30) days written notice (Notice Period). (b) If the Agreement is terminated pursuant to clause (a), then the Client must pay ALS for all Services performed up to the expiry of the Notice Period.

SABINA GOLD & SILVER CORP.
ATTN: Merle Keefe
Suite 1800 - 555 Burrard St.
Box 220
Vancouver BC V7X 1M7

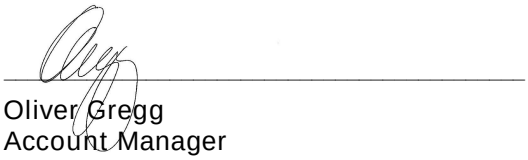
Date Received: 31-AUG-20
Report Date: 15-SEP-20 15:14 (MT)
Version: FINAL

Client Phone: 604-240-6619

Certificate of Analysis

Lab Work Order #: L2498397

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc:



Oliver Gregg
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2498397-1				
	Description					
	Sampled Date					
	Sampled Time					
	Client ID	TB				
Grouping	**Analyte**					
WATER						
Physical Tests	pH (pH)	5.35				
	Total Suspended Solids (mg/L)	<3.0				
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	<0.0050				
	Phosphorus (P)-Total (mg/L)	<0.0020				
Bacteriological Tests	Fecal Coliforms (CFU/100mL)	<1				
Aggregate Organics	Biochemical Oxygen Demand (mg/L)	<2.0				
	Oil And Grease (Visible Sheen)	NO				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Ammonia, Total (as N)	B	L2498397-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BOD5-TG	Water	Biochemical Oxygen Demand- 5 day (TAIGA)	SM5210B
EC-SCREEN-VA	Water	Conductivity Screen (Internal Use Only)	APHA 2510
Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.			
FC-MF-TG	Water	Fecal Coliforms by MF	SM9222D
NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
OGG-VISIBLE-SHEEN-VA	Water	Oil and Grease - Visible Sheen	AER D50
"Visible Sheen" refers to a qualitative visual observation of the presence or absence of rainbow sheen, iridescence, or non-aqueous phase liquid (NAPL) on the surface of a drilling waste (fluid portion, clear liquid portion, or total waste) or on an aqueous sample. No hold time guidance is available for this test. Field observations should also be recorded, because sample characteristics may change between sampling and time of observation at the laboratory. This is a non-accredited test.			
P-T-PRES-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorus
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample. Samples with very high dissolved solids (i.e. seawaters, brackish waters) may produce a negative bias by this method. Alternate methods are available for these types of samples. Arsenic (5+), at elevated levels, is a positive interference on colourimetric phosphate analysis.			
PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value
This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode It is recommended that this analysis be conducted in the field.			
TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
TG	TAIGA ENVIRONMENTAL LABORATORY (INAC)
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: SABINA GOLD & SILVER CORP.
Suite 1800 - 555 Burrard St. Box 220
Vancouver BC V7X 1M7
Contact: Merle Keefe

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-F-VA	**Water**							
Batch R5223155								
WG3403493-2 LCS								
Ammonia, Total (as N)			99.2		%		85-115	14-SEP-20
WG3403493-1 MB								
Ammonia, Total (as N)			0.0064	B	mg/L		0.005	14-SEP-20
OGG-VISIBLE-SHEEN-VA	**Water**							
Batch R5222985								
WG3402992-2 LCS								
Oil And Grease (Visible Sheen)			NO					11-SEP-20
WG3402992-1 MB								
Oil And Grease (Visible Sheen)			NO					11-SEP-20
P-T-PRES-COL-VA	**Water**							
Batch R5223138								
WG3403495-3 DUP		**L2498397-1**						
Phosphorus (P)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	14-SEP-20
WG3403495-2 LCS								
Phosphorus (P)-Total			94.9		%		80-120	14-SEP-20
WG3403495-1 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	14-SEP-20
WG3403495-4 MS		**L2498397-1**						
Phosphorus (P)-Total			100.9		%		70-130	14-SEP-20
PH-PCT-VA	**Water**							
Batch R5222066								
WG3402313-2 CRM		**VA-PH7-BUF**						
pH			7.00		pH		6.9-7.1	12-SEP-20
TSS-VA	**Water**							
Batch R5222647								
WG3402701-2 LCS								
Total Suspended Solids			105.2		%		85-115	11-SEP-20
WG3402701-1 MB								
Total Suspended Solids			<3.0		mg/L		3	11-SEP-20

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Total Suspended Solids by Gravimetric							
	1	Not provided	11-SEP-20 12:30	7	11	days	EHT
pH by Meter (Automated)							
	1	Not provided	12-SEP-20 10:00	0.25	282	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2498397 were received on 31-AUG-20 16:15.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 200707

- FINAL REPORT -

Prepared For: ALS Environmental

Address: 314 Old Airport Road
Unit 116
Yellowknife,NT
X1A 2R1

Attn: **Oliver Gregg** **Facsimile:**

Final report has been reviewed and approved by:

Glen Hudy
Quality Assurance Officer

NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
  - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
  - Environment Canada
  - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

ReportDate: Wednesday, September 09, 2020
Print Date: ***Wednesday, September 09, 2020***

Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 200707

- CERTIFICATE OF ANALYSIS -

Client Sample ID: L2498397-1 TB **Taiga Sample ID:** 001

Client Project:
Sample Type: Water
Received Date: 03-Sep-20
Sampling Date: 31-Aug-20
Sampling Time:
Location:
Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Nutrients						
Biochemical Oxygen Demand	< 2	2	mg/L	03-Sep-20	SM5210:B	
Microbiology						
Coliforms, Fecal	< 1	1	CFU/100mL	03-Sep-20	SM9222:D	

ReportDate: Wednesday, September 09, 2020
Print Date: *Wednesday, September 09, 2020*

Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 200707

- CERTIFICATE OF ANALYSIS -

Client Sample ID: L2498397-1 TB **Taiga Sample ID:** 001

*** Taiga analytical methods are based on the following standard analytical methods**
SM - Standard Methods for the Examination of Water and Wastewater
EPA - United States Environmental Protection Agency

Comments *L2498397*

ReportDate: Wednesday, September 09, 2020
Print Date: ***Wednesday, September 09, 2020***

Appendix C Waste Disposal

Table 1. Incinerator and Open Burning Waste Disposal Quantities

Incinerator						Open Burn (Volume)	Waste Oil to Furnace (Litres)
Date:	Food (lbs)	Waste (lbs)	Misc. (lbs)	Water (Lit)	Ash Out (lbs)		
2020-07-05	330	15	220		0		
2020-07-06	80	35	227		0		
2020-07-07	165		275		230		
2020-07-08	229	139	225		120		
2020-07-09	204	152	103		43		
2020-07-10	237	195	487				
2020-07-11	187	131	1484		65		
2020-07-12	140	181	35	615	120		
2020-07-13	195	105	183	205	120		
2020-07-14	235	163	325	615	150		
2020-07-15	181	133	211		190		
2020-07-16	237	135	142		40		
2020-07-17	135	91	403		40		
2020-07-18	207	164	350	205	120		
2020-07-19	114	149	324		180		
2020-07-20	490	359	271		80		
2020-07-21	205	181	155	205	40		
2020-07-22	130	110	265				
2020-07-23	822	538	677				
2020-07-24	343	409	433		37		
2020-07-25	720	566	902				
2020-07-26	687	386	854		107.5		
2020-07-27	592	242	948		36		
2020-07-28	655	358	930		56		
2020-07-29	693	365	1357		41.5		
2020-07-30	277	235	1477		54		
2020-07-31	275	199	210				
2020-08-01	902	395	1087		45		
2020-08-02	860	414	1593		58.5		
2020-08-03	691	320	1300		45.5		
2020-08-04	857	118	1074		39.5		
2020-08-05	275	128	584		35		
2020-08-06	250	136	372		70		
2020-08-07	217	136	479		65		
2020-08-08	205	120	475		90		
2020-08-09	260	170	210		100		
2020-08-10	40	155	680		180		
2020-08-11	490	145	360		110		
2020-08-12	190	180	440		80		
2020-08-13	340	240	370		75		
2020-08-14	235	175	294		70		

Table 1. Incinerator and Open Burning Waste Disposal Quantities

2020-08-15	190	70	320		45		
2020-08-16	305	151	255		85		
2020-08-17	418	80	280	205	50		
2020-08-18	280	180	345		40		
2020-08-19	180	130	190		65		
2020-08-20	180	102	350		45		
2020-08-21	300	140	490		65		
2020-08-22	240	80	345		80		
2020-08-23	187	142	365		85		
2020-08-24	205	140	675		60		
2020-08-25	185	60	520		60		
2020-08-26	270	165	185		60		
2020-08-27	185	110	280		100		
2020-08-28	255	140	315		80		
2020-08-29	210	160	390		40		
2020-08-30	170	145	325		70		
2020-08-31	280	160	262	4100	50		1025
2020-09-01	170	120	400		60		
2020-09-02	230	200	250		50		
2020-09-03	330	180	270		30		
2020-09-04	310	280	315		50		
2020-09-05	280	180	370		70	1/8	
2020-09-06	190	140	400		70		
2020-09-07	220	180	380	205	100		
2020-09-08	90	180	270	205	90	1/4	1000
2020-09-09	215	155	570	205	120	1/4	
2020-09-10	290	230	505	205	180		
2020-09-11	260	190	120	205	65		260
2020-09-12	300	175	270	205	120	1/8	
2020-09-13			60	205		1/2	
2020-09-14	275	295	450	205	60	1/8	
2020-09-15	300	220	380	205	70		
2020-09-16	330		376				
2020-09-17	383	228	574		176		60
2020-09-18	669	365	930		76		
2020-09-19	397	295	491		47		
2020-09-20	461	239	1123		81	1/4	
2020-09-21	492	525	902		85		
2020-09-22	344	298	774				
2020-09-23	531	162	1009		76		
2020-09-24	529	251	850		83		
2020-09-25	776	293	860		87		
2020-09-26	560	220	521		97		
2020-09-27	560	409	929		83		
2020-09-28					87		

Table 1. Incinerator and Open Burning Waste Disposal Quantities

2020-09-29	200	300	100		100	1/2	
2020-09-30	310	245	435		45	1/4	
2020-10-01	250	120	400		90	1/8	
2020-10-02	240	130	260		75	1/4	
2020-10-03	240	180	430		60	1/2	
2020-10-04	180	140	160	40	80		
2020-10-05	280	82	205	205	65		
2020-10-06	235	110	525		60		
2020-10-07	330	130	600		60	1/2	
2020-10-08	180	80	500	205	60		
2020-10-09	160	100	100		65		
2020-10-10	170	100	195	120	60		
2020-10-11	185	100	115	80	30		820
2020-10-12	190	90	104	100	40	1/8	
2020-10-13	185	95	140		5		
2020-10-14	260	155	100	100	0		
2020-10-15	170	60	170	0	30		
2020-10-16	200	95	350		40		
2020-10-17	260	100	75	205	25	1/8	410
2020-10-18	170	110	150		0		
2020-10-19	232	108	175	20	45		
2020-10-20	177	75	125	40	30		
2020-10-21	120	170	120		20		
2020-10-22	250	125	210		30		
2020-10-23	376	352	186		0		
2020-10-24	501	201	406	205	77		
2020-10-25	665	49	684		56		
2020-10-26	291	108	265				
2020-10-27	841	656	1537		83		
2020-10-28	399	254	532		39		
2020-10-30	464	190	843			1/4	
2020-10-31	362	225	280				
2020-11-01	187	93	115	0	53	0	0
2020-11-02	234	119	93	0	0	0	0
2020-11-03	300	150	102	0	0	0	0
2020-11-04	286	120	125	0	0	0	0
2020-11-05	599	426	776	0	88	0	0
2020-11-06	400	199	370	0	145	0	0
2020-11-07	482	181	1023	0	43	0	0
2020-11-08	375	160	215		53		
2020-11-09	568	232	291		75		
2020-11-10	535	354	557		93		
2020-11-11	120	80	80		30		
2020-11-12	230	80	120			1/8	
2020-11-13	185	90	40		10		

Table 1. Incinerator and Open Burning Waste Disposal Quantities

2020-11-14	205	110	75	205	40		
2020-11-15	245	100	145	90	45		
2020-11-16	201	95	140		15		
2020-11-17	306	133	245		40		
2020-11-18	208	60	30		60		
2020-11-19	115	158	105				
2020-11-20	300	75	300		85		
2020-11-21	270	120	225		105		
2020-11-22	205	130	150		90		
2020-11-23	180	85	145		40		205
2020-11-24	142	87	110				40
2020-11-25	114	54	117				
2020-11-26	188	65	144				
2020-11-27	179	96	100			1/4	
2020-11-28	210	124	30	205	40		
2020-11-29	223	87	50		90		
2020-11-30	186	94	150	80	60		200
2020-12-01	180	100	210	20	45	1/8	40
2020-12-02	231	102	210		80		200
2020-12-03	185	148	111		25		200
2020-12-04	180	60	90		65		100
2020-12-05	201	73		40			100
2020-12-06	190	90	50	0	60		
2020-12-07	245	97	115		65		
2020-12-08	205	85	115		40		
2020-12-09	160	70	360		40		
2020-12-10	260	8		255	35		
2020-12-11	130			200	0		
2020-12-12	100		200		50		
2020-12-13	100	100	100		0		
Annual Totals	**47527**	**26658**	**61238**	**10410**	**9301.5**	**4 3/4**	**4660**

Table 2. Waste Quantities Shipped Off Site to KBL Environmental

Date Received	Waste Stream	Qty
07/07/2020	NON REGULATED SOLIDS-INCINERATOR ASH	4.00
		4.00
	NON REGULATED SOLIDS-SCRAP METAL	4.00
		4.00
23/07/2020	FLAMMABLE LIQUIDS-FUEL	2.00
		2.00
	NON REGULATED SOLIDS-EMPTY DRUMS	30.00
		30.00
24/07/2020	NON REGULATED SOLIDS-INCINERATOR ASH	1.00
		1.00
12/08/2020	NON REGULATED SOLIDS-EMPTY DRUMS	10.00
		10.00
	SOIL CONTAMINATED WITH HYDROCARBONS	12.00
		12.00
	WASTE LEACHATE- OIL/WATER/MIX	1.00
		1.00
	WASTE LEACHATE-OIL	1.00
		1.00

Appendix D Monitoring Activity Overview by Station

2020 Monitoring Activity Overview by Station

Monitoring Program Station	Monitoring Type	Description	Mine Phase	Group Code*	Frequency	Monitoring Activity
BRP-G-01 to BRP-G-TBD	Regulated Monitoring	**General Site Runoff** Surficial runoff anywhere at both Goose Property and MLA, including quarries; monitoring for erosion and sedimentation.	Construction	C	Weekly if flow enters a waterbody	No flow entering a waterbody was observed in 2020
BRP-S-01 to BRP-S-TBD	General Monitoring	**General Seeps** Seepage or runoff from excavated and/or stockpiled material anywhere at both Goose Property and MLA, including quarries, that does not gather into a collection system or the site is reclaimed.	Construction and Operations	A, D	Monthly during flow, or as found	No seepage was observed in 2020
BRP-01	Regulated Monitoring	**Goose Lake Discharge** (discharge point for release of dewatering effluent with or without treatment)	Construction	A, B, G	Weekly during dewatering	N/A – dewatering activities have not been initiated
				D	Four times during dewatering, at the same time as the weekly samples	
				H	Once per month during dewatering, at the same time as Group D	
				I	One time during dewatering, at the same time as Group D	
BRP-02	General Monitoring	**Llama Lake** (intake point for dewatering, triggers need for treatment prior to discharge at BRP-01)	Construction	C (TSS only)	Weekly if treatment is required; no sample if treatment is not required	N/A – dewatering activities have not been initiated
BRP-03	Verification Monitoring	**Llama Pit** (representative of collected pit water prior to transfer to tailings management facility)	Operations Stage 1 to Operations Stage 2	A, G	At Licensee's discretion	N/A – facility construction has not been initiated/ n/a mine phase
BRP-04	General Monitoring	**Llama Pit Lake** (representative of flooded pit during flooding and before overflow to the downstream environment)	Closure* to Post-Closure	A, D	Twice per year	N/A – facility construction has not been initiated/ n/a mine phase
BRP-05	Verification Monitoring	**Llama WRSA Pond** (representative of collected water quality)	Operations Stage 1 to Closure	A, G	At Licensee's discretion	N/A – facility construction has not been initiated/ n/a mine phase
BRP-06	General Monitoring	**Umwelt Lake** (intake point for dewatering, triggers need for treatment prior to discharge at BRP-01)	Construction	C (TSS only)	Weekly if treatment is required; no sample if treatment is not required	N/A – dewatering activities have not been initiated
BRP-07	Verification Monitoring	**Umwelt Pit** (representative of collected pit water prior to transfer to tailings management facility)	Construction to Operations Stage 2	A, G	At Licensee's discretion	N/A – facility construction has not been initiated
BRP-08	General Monitoring	**Umwelt Pit Lake** (representative of flooded pit during flooding and before overflow to the downstream environment)	Closure to Post-Closure	A, D	Twice per year	N/A – facility construction has not been initiated/ n/a mine phase

BRP-09	Verification Monitoring	**Umwelt WRSA Pond** (representative of collected water quality, including landfill seepage/runoff)	Construction to Closure (early)*	A, G	At Licensee's discretion	N/A – facility construction has not been initiated
BRP-10	Verification Monitoring	**Primary Water Pond** (representative of collected water quality)	Construction to Closure (early)	A, D	At Licensee's discretion	N/A – facility construction has not been initiated
BRP-11	Verification Monitoring	**Saline Water Pond** (representative of stored water quality)	Construction (late) to Closure (early)	A, D	At Licensee's discretion	N/A – facility construction has not been initiated
BRP-12	General Monitoring	**Big Lake Intake** (intake point for potable and industrial water withdrawal)	Construction to Closure	A, D	Four times per year	N/A – facility construction has not been initiated
				B	Weekly	
BRP-13	Verification Monitoring	**Ore Stockpile Pond** (representative of collected water quality)	Construction to Closure (early)	A, D	At Licensee's discretion	N/A – facility construction has not been initiated
BRP-14	Verification Monitoring	**ANFO Plant** (representative of collected water quality)	Construction to Closure	A, E	At Licensee's discretion	N/A – facility construction has not been initiated
BRP-15	Regulated Monitoring	**Goose Fuel Tank Farm** (representative of collected water quality)	Construction to Closure	A, E	Prior to discharge or transfer of water	N/A – facility construction has not been initiated
BRP-16	Regulated Monitoring	**Goose Hazardous Waste Management Area** (representative of collected water quality)	Construction to Closure	A, E	Prior to discharge or transfer of water	N/A – facility construction has not been initiated
BRP-17	Regulated Monitoring	**Goose Property Sewage Treatment Plant** (discharge point for treated sewage onto land)	Construction to Closure	A, F	Prior to discharge	N/A – facility construction has not been initiated
BRP-17A	Regulated Monitoring	**Goose Property Sewage Treatment Plant** (discharge point for treated sewage into Tailings Storage Facility or Tailing Facility)	Construction to Closure*	A, F	Prior to discharge	N/A – facility construction has not been initiated
BRP-18	General Monitoring	**Llama Watershed Outflow** (representative of non-contact water, PN04 from Water and Load Balance)	Operations Stage 1 to Closure	A, D	Once during freshet	N/A mine phase
BRP-19	General Monitoring	**Echo Outflow** (representative of non-contact water). PN09 from water and load balance	Operations Stage 1 to Closure	A, D	Once during freshet	N/A mine phase
BRP-20	Verification Monitoring	**Echo Pit** (representative of collected pit water prior to transfer to tailings management facility)	Operations Stage 2	A, G	At Licensee's discretion	N/A – facility construction has not been initiated/ n/a mine phase
BRP-21	General Monitoring	**Echo Pit Lake** (representative of flooded pit during flooding and before overflow to the downstream environment)	Closure to Post-Closure	A, D	Twice per year	N/A – facility construction has not been initiated/ n/a mine phase
BRP-22	Verification Monitoring	**Echo WRSA Pond** (representative of collected water quality)	Operations Stage 2 to Closure (early)	A, G	At Licensee's discretion	N/A – facility construction has not been initiated/ n/a mine phase
BRP-23	General Monitoring	**Gander Pond Outflow** (representative of non-contact water, PN07 from Water and Load Balance)	Operations Stage 1 to Closure	A, D	Once during freshet	N/A mine phase

BRP-24	General Monitoring	**Goose Lake Intake** (intake point for potable and industrial water withdrawal)	Operations Stage 1 to Closure (early)	B	Weekly	N/A- no water withdrawn under this Licence in 2020
BRP-25	Verification Monitoring	**Goose Pit** (representative of collected pit water prior to transfer to tailings management facility)	Operations Stage 1 to Operations Stage 2	A, G	At Licensee's discretion	N/A – facility construction has not been initiated/ n/a mine phase
BRP-26	General Monitoring	**Goose Pit Lake** (representative of flooded pit during flooding and before overflow to the downstream environment)	Closure* to Post-Closure	A, D	Twice per year	N/A – facility construction has not been initiated/ n/a mine phase
BRP-27	Verification Monitoring	**Goose Main Tailings Facility** (intake point for water treatment, represents pre-treatment water quality)	Operations Stage 3 to Closure	A, G	At Licensee's discretion	N/A – facility construction has not been initiated/ n/a mine phase
BRP-28	Verification Monitoring	**Goose Main Tailings Facility** (discharge point for water treatment, represents post-treatment water quality)	Operations Stage 3 to Closure	A, G	At Licensee's discretion	N/A – facility construction has not been initiated/ n/a mine phase
BRP-29	Verification Monitoring	**TSF WRSA Pond** (representative of collected water quality, including landfill seepage/runoff)	Operations Stage 1 to Closure	A, G	At Licensee's discretion	N/A – facility construction has not been initiated/ n/a mine phase
BRP-30	General Monitoring	**Goose Southeast Inflow** (representative of non-contact water, PN06 from Water and Load Balance)	Operations Stage 1 to Closure	A, D	Once during freshet	N/A mine phase
BRP-40	General Monitoring	**Bathurst Inlet Intake** (intake point in marine environment for potable and industrial water withdrawal)	Construction to Closure	A, D, B	At Licensee's discretion	No water was withdrawn from this location in 2020
BRP-41	General Monitoring	**Bathurst Inlet Discharge** (discharge point in marine environment for effluent from desalinization plant)	Construction to Closure	A, J	At Licensee's discretion	No water was withdrawn from this location in 2020
BRP-42	Regulated Monitoring	**MLA Greywater** (discharge point for treated greywater onto land)	Construction to Closure	A, F	Prior to discharge or transfer of water	No greywater was discharged at the MLA in 2020
BRP-43	Regulated Monitoring	**MLA Fuel Tank Farm** (representative of collected water quality)	Construction to Closure	A, E	Prior to discharge or transfer of water	N/A – facility under construction
BRP-44	Regulated Monitoring	**MLA Landfarm** (representative of collected water quality)	Construction to Closure	A, E	Prior to discharge or transfer of water	N/A – facility construction has not been initiated
BRP-45	Regulated Monitoring	**MLA Hazardous Waste Management Area** (representative of collected water quality)	Construction to Closure	A, E	Prior to discharge or transfer of water	N/A – facility construction has not been initiated
BRP-49	Regulated Monitoring	**MLA Temporary Fuel Storage Facility** (representative of collected water quality)	Construction	A, E	Prior to discharge or transfer of water	Water was sampled prior to discharge. See Annual report
BRP-51	Regulated Monitoring	**Goose Landfarm** (representative of collected water quality)	Construction to Closure	A, E	Prior to discharge or transfer of water	N/A - no water was discharged from this facility this month
BRP-52	General Monitoring	**MLA Pond S1** (intake point for potable and industrial water withdrawal)	Construction to Closure	A, D	Once per quarter when in use	No water was withdrawn from this location in 2020
				B	Weekly when in use	
BRP-53	General	**MLA Pond S2** (intake point for potable and industrial	Construction to	A, D	Once per quarter when in use	No water was withdrawn from this

BRP-53	Monitoring	for potable and industrial water withdrawal)	Closure	B	Weekly when in use	withdrawn from this location in 2020
BRP-54	General Monitoring	**MLA Lake 3** (intake point for potable and industrial water withdrawal)	Construction to Closure	A, D	Once per quarter when in use	No water was withdrawn from this location in 2020
				B	Weekly when in use	
BRP-55	General Monitoring	**MLA Lake 4** (intake point for potable and industrial water withdrawal)	Construction to Closure	A, D	Once per quarter when in use	No water was withdrawn from this location in 2020
				B	Weekly when in use	
BRP-I-01 to BRP-I-TBD	General Monitoring	**Interconnection Winter Ice Road Proximal Water Bodies** (intake points for fresh water used in the construction of the Interconnection Winter Ice Road)	Construction to Closure	B	Weekly when in use	No water was withdrawn from this location in 2020

* Refers to Group Code from Water Licence 2AM-BRP1831 Schedule I Table 1

Appendix E Road Management Plan

BACK RIVER PROJECT
Road Management Plan

March 2021

BACK RIVER PROJECT
ROAD MANAGEMENT PLAN

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Revision Log

Date	Section	Page	Revision
October 2017	All	All	Supporting Document for Type A Water Licence Application, submitted to Nunavut Water Board for review and approval
March 2021	All	All	Revision to address requirements of Project Certificate No. 007 and Water Licence 2AM-BRP1831 and related commitments and to reflect the Project changes outlined in Sabina's 2020 Modification Package

Acronyms

AEMP	Aquatic Effects Monitoring Plan
AQMMP	Air Quality Monitoring and Management Plan
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
DFO	Fisheries and Oceans Canada
FEIS	Final Environmental Impact Statement
GNWT	Government of Northwest Territories
INAC	Indigenous and Northern Affairs Canada; currently known as Crown-Indigenous Relations and Northern Affairs Canada
KIA	Kitikmeot Inuit Association
MAD	Main Application Document
MLA	Marine Laydown Area
NWB	Nunavut Water Board
Project	Back River Project
RMP or Plan	Road Management Plan
Sabina	Sabina Gold & Silver Corp.
WIR	Winter Ice Road

Executive Summary

This Plan describes the procedures and motoring at the Back River Project relevant to site roads, including winter ice roads and all weather roads and airstrips. This Plan ensures that 1) roads are constructed, used and decommissioned in a manner so as to minimize impacts on the environment as well as risk to users 2) road usage impacts are monitored, 3) adaptive management is employed where needed and that 4) any monitoring and reporting associated with road construction and use occurs.

RMP ᐃᓱᒪᑕᐅᓂᖅᓂᑦ ᓇᐃᓐᓇᖅᓯᒪᔨᖅ

ᐸᖅᓇᐅᑎ ᐅᖃᐅᓯᖃᖅᑐᖅ ᐊᑐᖅᑕᐅᔪᕆᐊᓕᖅᓂᖅ ᐊᒻᒪᓗ ᐃᑯᒪᓕᕆᓂᖅᓂᖅ ᓴᖅᓂᖅᓴᔨᒥᑦ ᐱᓵᔨᐱᑎᖃᖅᑐᑦ ᐅᔪᕐᖃᑕᕆᐊᖏᑦᑕ ᐊᖅᑯᑎᓂᖅ, ᐃᓕᐅᔨᓗᑎᒃ ᐅᑭᐅᖅᑯᑦ ᓯᑯᖅᑯᑦ ᐊᖅᑯᑎᒋᑦ ᐊᒻᒪᓗ ᐅᑭᐅᓗᖅᑕᖅ ᐊᖅᑯᑎᓂᖅ ᐊᒻᒪᓗ ᒥᑦᑕᖅᐹᖅᓂᑦ. ᐸᖅᓇᐅᑎ ᐃᒪᖅᓇᐃᑎᑕᑎᔨᖅ 1) ᐊᖅᑯᑎᓕᐅᖅᑕᐅᓯᒪᓗᓂ, ᐊᑐᖅᑕᐅᓗᑎᒃ ᐊᒻᒪᓗ ᐊᑐᑭᖅᓱᖅᑎᑕᐅᓗᑎᒃ ᒥᑭᓴᑯᖅᑎᓂᐅᓂᐊᖅᓗᑎᑦ ᐊᖅᑐᖅᓯᓂᑦ ᐊᓂᒍᒧᐊᑦ ᐊᒻᒪᓗ ᐅᓗᓇᐊᓇᖅᓂᐅᔨᑦ ᐊᑐᖅᑎᐅᔨᓄᑦ 2) ᐊᖅᑯᑎᑎ ᐊᑐᖅᑕᐅᓂᖅᓱᓄᑦ ᐊᖅᑐᖅᓯᓯᐅᔨᓂᖅ ᖃᐅᔨᓴᖅᑕᐅᓗᑎᒃ, 3) ᐊᑐᓕᖅᑎᑦᑎᓂᖅᒧᑦ ᐊᐅᓪᓚᑎᓂᖅ ᐊᑐᖅᑕᐅᓗᓂ ᐱᕆᐊᓕᕆᓂᖅᓂᑦ ᐊᒻᒪᓗ 4) ᒪᓕᒃᑕᐅᓂᖅᑭᓄᑦ ᖃᐅᔨᓴᖅᓯᓗᑎᑦ ᐊᒻᒪᓗ ᐅᖃᐅᔨᐅᓗᑎᒃ ᐊᖅᑯᑎᑦ ᕿᓇᕐᐅᔨᑦ ᐊᒻᒪᓗ ᐊᑐᖅᑕᐅᕆᔭᖅᑕᒡᒐᑦ.

Apqut Aulatauni Parnaut (RMP) Ataniqnut Nainaqhimayuq

Una Parnaut unniqtuqtai tapkuat pityuhit ingilratyutitlu talvani Hanningayuq Kuugaq Havaguhia turangayut inaani apqutit, ilautitlugu ukiumi hikumi apqutit tamaitalu ukiuq tamaat apqutit milviitlu. Una Parnaut atuqpiarianga tamna 1) apqutit hanayauvaktut, atuqtauyut ituptiqtauplutiklu piplugit mikhigiarahuaqni aktuanit avatigiyauyumun tahapkuatlu hivuranaqni atuqtinut 2) apqutit atuqni aktuani munariyauyut, 3) atuliqnit aulatauni atuqtauyut tapkunani aturiaqaqnigut tapkuatlu 4) tamaita malikhaqni munariyauyut tuhaqhitauyutlu piqatai tapkuat apqutit hanayauni atqunilu piyai.

Introduction

The Back River Project (the Project) is a gold project owned by Sabina Gold & Silver Corp. (Sabina) within the West Kitikmeot region of southwestern Nunavut. It is situated approximately 400 kilometres (km) southwest of Cambridge Bay, 95 km southeast of the southern end of Bathurst Inlet, and 520 km northeast of Yellowknife, Northwest Territories. The Project is located predominantly within the Queen Maud Gulf Watershed (Nunavut Water Regulations, Schedule 4).

The Project is comprised of two main areas, Goose Property and the Marine Laydown Area (MLA), with interconnecting winter ice roads. The majority of annual resupply will be completed using the MLA situated along the western shore of southern Bathurst Inlet, which is connected seasonally to Goose Property via an approximately 160 km long winter ice road (WIR). Both the Goose Property and the MLA make use of local networks of all weather roads and pads.

The Road Management Plan (RMP or Plan) describes how Sabina intends to implement a range of environmental management, mitigation, and monitoring measures related to the design, construction, maintenance, and use of the winter ice roads and all-weather roads and airstrips. These measures outline how Sabina will avoid, minimize, mitigate and/or manage to an acceptable level, the potential adverse effects on the environment associated with Project Roads.

The RMP has been constructed in consideration of all applicable guidelines and requirements, including those of Project Certificate No. 007 and Water Licence 2AM-BRP1831. This Plan will be reviewed and updated as needed to reflect changes in regulatory requirements, facility operation or maintenance, results of environmental monitoring, management reviews, incident investigations, best practice updates or other Project-specific protocols.

Any updates to this Plan will be filed with the Nunavut Impact Review Board (NIRB) and the Nunavut Water Board (NWB) with the submission of the annual reports as per the requirements of the Project Certificate No. 007 and Water Licence 2AM-BRP1831.

1. Scope and Objectives

The purpose of this Plan is to outline and address the requirements related to the WIR and all-weather road construction, use, management, and monitoring and applies to all Sabina projects in the Kitikmeot region.

The Plan outlines construction, operation, and management of access and terrestrial transportation for the Project including construction and operation of all-weather roads and airstrips, WIRs, trails.

All Project roads are private and for the exclusive use of Sabina's operations.

The measures identified in this Plan are intended to protect water quality, fish habitat, terrestrial wildlife, health and safety of employees, and cultural and heritage resources during construction and use of the transportation corridors.

1.1 RELATED PLANS AND STUDIES

This Plan is intended for use in conjunction with the following Plans:

- Vegetation Monitoring Plan
- Spill Contingency Plan;
- Hazardous Materials Management Plan;
- Environmental Management and Protection Plan;
- Water Management Plan (WMP);
- Borrow Pits and Quarry Management Plan;
- Interim Closure and Reclamation Plan;
- Aquatic Effects Management Plan (AEMP);
- Risk Management and Emergency Response Plan;
- Socio-Economic Monitoring Plan (SEMP);
- Air Quality Monitoring and Management Plan (AQMMP); and
- Wildlife Mitigation and Monitoring Plan (WMMP).

2. Applicable Legislation and Guidelines

The RMP has been prepared to comply with existing regulations and follow the available guidelines provided by the federal government and the government of Nunavut. Applicable regulations are provided in Appendix A.

In addition, the following guidance documents have also been used to inform the design and management decisions presented in the Plan:

- Northern Land Use Guidelines Access: Roads and Trails (INAC 2010);
- Aerodrome Standards and Recommended Practices (Transport Canada 2005);
- Geometric Guidelines (Roads and Transportation 1986);
- Protocol for Winter Water Withdrawal from Ice-Covered Waterbodies in the Northwest Territories and Nunavut (DFO 2010);
- Environmental Guidelines for the Construction, Maintenance and Closure of Winter Roads in the Northwest Territories (GNWT DoT 1993); and
- Guidelines for Safe Ice Construction (GNWT DoT 2015).

Road and airstrip construction and use will also adhere to applicable requirements of Project Certificate No. 007, Water Licence 2AM-BRP1831, and all relevant land leases, permits, authorizations, and approvals.

3. Roles and Responsibilities

The implementation of the management, mitigation, and adaptive management specified in this Plan and the ultimate success of the mitigation measures will be the responsibility of the Construction Manager during Construction and the General Mine Manager during Operations. The Construction or General Manager will approve all relevant policies and documents, auditing, action planning, and the verification process.

The Environmental Manager, along with his/her direct reports, is responsible for monitoring the effective implementation of this Plan and for all external reporting. The Environmental Manager will also ensure any concerning results are communicated to the Construction Manager/General Manager for the implementation of adaptive management and will ensure this Plan is reviewed and revised as needed.

The Environmental Manager, along with their direct reports, are responsible for:

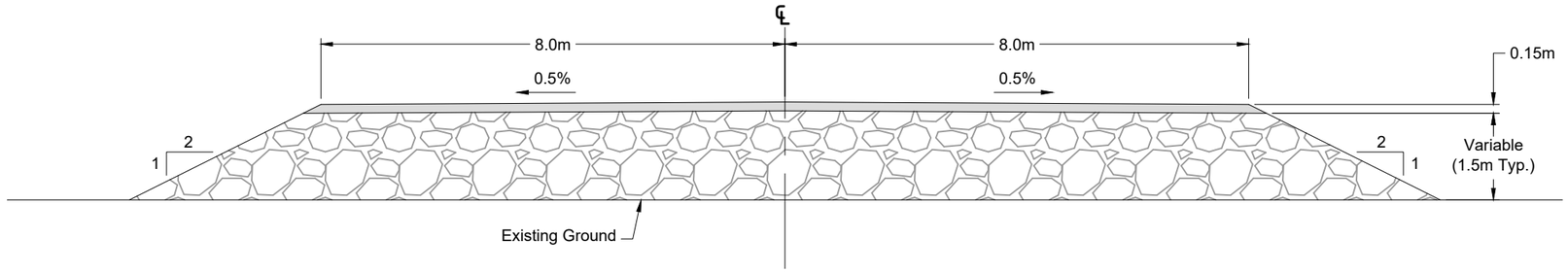
- Supporting Plan review and revision;
- Monitoring;
- Internal reporting;
- External reporting; and
- Verifying compliance and application of adaptive management.

4. Planning and Implementation

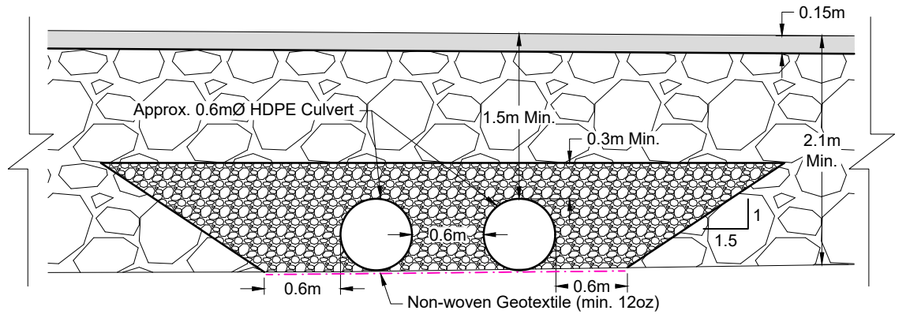
4.1 ALL-WEATHER ROADS

All-weather roads at the MLA and Goose Property consist of haul roads and service roads. Goose Property will have approximately 5 km of service roads and 10 km of haul roads. The MLA will have approximately 3 km of service roads and no haul roads.

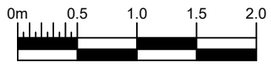
Typical cross-sections of all-weather roads and watercourse crossings are shown in Figure 5.1-1. Studies, reports, and plans relevant to the design of all-weather road infrastructure are presented in Section 2.1.

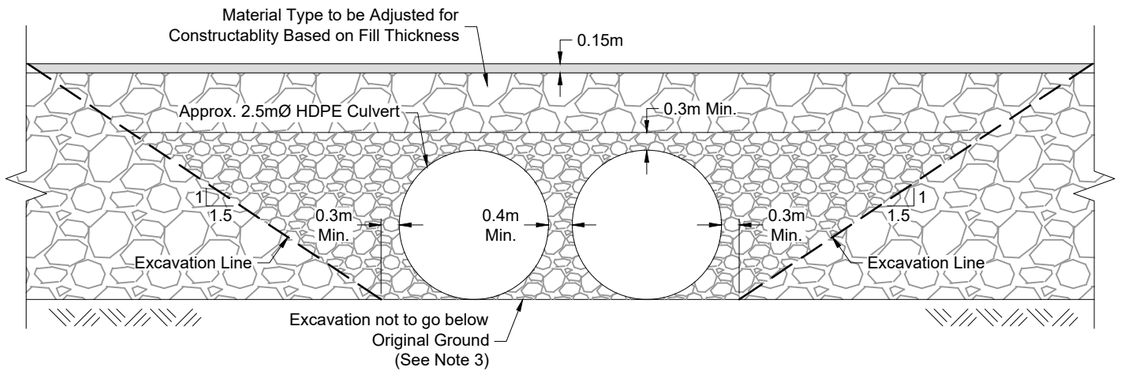


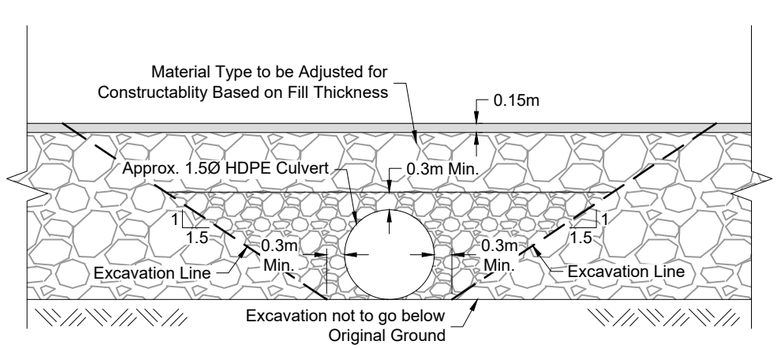
Typical Road Section



3 - **Detail 3 - Typical Cross Section of Small Diameter Double HDPE Culvert Crossing**







4 - **Detail 4 - Typical Cross Section of Large Diameter Double Culvert Crossing**

5 - **Detail 5 - Typical Cross Section of Single Culvert Crossing**

LEGEND

- Non-Woven Geotextile
- ROM Material
- Engineered Fill / Crush material
- Surfacing Material

NOTES

1. All dimensions in meters unless otherwise stated.
2. Installation of culverts to follow the manufacturers assembly and installation guide.
3. Total depth of cover above culvert, including bedding material, surfacing material, and ROQ material, will be 1.5m minimum.
4. For safety barrier sizing, height to be a minimum ¾ the diameter of the largest vehicle tire.
5. If natural ground is less that 1% grade, fill material (surfacing material) to be placed below culvert to establish minimum 1% grade.
6. Non-woven geotextile is suggested to be placed below all culvert pipes to help low rates of permafrost degradation from surface water flow, and to help reduce differential settlement.
7. Ultimate crest width of roads will be set based on the design vehicles. The minimum road crest width of single land traffic shall be twice the width of the largest design vehicle as per WSCC (2015). Dual lane traffic requires road width three times the largest design vehicle.
8. Culverts on site may be HDPE (High-density polyethylene) or CSP (corrugated steel pipe). Final materials to be determined during detailed design.

DRAWING NO.	DRAWING TITLE	NO.	DESCRIPTION	CHK'D	APP'D	DATE
REFERENCE DRAWINGS		REVISIONS				
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		A	Permit Amendment Dwg	JBK	CP	20/06/05

For Permit Amendment

PROFESSIONAL ENGINEERS STAMP

srk consulting

DESIGN:	DRAWN:	REVIEWED:
JBK	TAH	JBK
CHECKED:	APPROVED:	DATE:
JBK	CP	2020/06/05

FILE NAME: 1CS020.018 - Typical Sections.dwg

Sabina GOLD & SILVER CORP.

Back River Project

SRK JOB NO.: 1CS020.018

Road Management Plan

DRAWING TITLE: All-Weather Road and Watercourse Crossing Typical Cross Sections

DRAWING NO.	SHEET	REVISION NO.
5.1-1	1 OF 1	A

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4.1.1 Design Criteria for All-weather Roads

4.1.1.1 Haul Roads

Design criteria were determined considering the *Mine Health and Safety Act* (Northwest Territories and Nunavut) and the appropriate Transportation Association of Canada Geometric Guidelines. The following design criteria were used for the haul roads:

- Design vehicle: Cat 775G or similar;
- Minimum width of travelling surface: 20 m;
- Design speed: 60 km/h;
- Side slopes: 2H:1V;
- Maximum grade: 10%;
- Safety berms for fills greater than 3 m in height: 1.1 m; and

Drainage: major culverts and bridges are generally designed to a 1-in-100-year return period.

Where there is combined haul and service traffic on a road, surfacing gravel will be used.

4.1.1.2 Service Roads

Service roads are used for smaller vehicles (i.e., light trucks) to access ancillary infrastructure, such as water supply sources, Goose Airstrip, and explosives storage facility. The following design criteria were used for the service roads:

- Design vehicle: light/medium truck;
- Minimum width of travelling surface: 4.5 m for single-lane or 8 m for double-lane;
- Design speed: 50 km/h;
- Side slopes: 2H:1V;
- Maximum grade: 10%;
- Safety berms for fills greater than 3 m in height: 0.55 m; and

Drainage: major culverts and bridges to be generally designed to a 1-in-100-year return period.

Surface gravel will be used on all service roads.

4.1.2 Construction of All-weather Roads

All-weather roads will be constructed with run-of-mine or run-of-quarry rock placed directly onto the tundra to preserve the permafrost. A layer of graded surfacing material will be placed to provide a protective trafficking layer. Construction materials will be sourced from locally developed geochemically suitable overburden and rock quarries as described in the Borrow Pits and Quarry Management Plan.

4.1.2.1 Geotechnical Recommendations

The understanding of ground conditions for design and engineering of Goose Plant Site infrastructure, including all-weather roads, has been informed by geotechnical investigations including test pits, drill holes, thermistor installations, and a variety of laboratory and in-situ testing. Geotechnical design is also supported by ERM Rescan's 2014 Cumulative Permafrost Baseline Data Report which includes observations

on active layer freeze-thaw cycle and active layer depth from 2007 to 2014. Additional details are provided in the Site-Wide Geotechnical Properties Report (MAD Appendix F-2).

All-weather road preparation will heed the following recommendations from geotechnical investigations and thermal modelling for the Goose Plant Site for unheated infrastructure such as roads, pipelines, and airstrips where some differential settlement is acceptable (MAD Appendix F-2):

- 1.0 m compacted run-of-quarry rock-fill pad (or geochemically suitable waste rock) on top of undisturbed grade for service roads;
  - maximum rock size limited to 0.9 m.
- 1.5 to 2.0 m thickness for haul roads to minimize deformation;
  - maximum rock size limited to 0.9 m.
- Rock shatter required where roads cross over rock highs that impact road grade.
- 150 mm of 2" minus topping directly on top of rock-fill pad for trafficability (no need for intermediate 6" minus layer).

4.1.3 Water Crossings

All-weather roads will include four stream crossings, all of which are situated on the Goose Property. Most of the streams will be dry most of the year, but there may be considerable flow during freshet.

Stream crossing designs are waterbody-specific. In general, two types of culverts are considered for the site roads and airstrips:

- Non-fish-bearing crossings; and
- Fish-bearing crossings.

Non-fish-bearing stream crossings will consist of corrugated steel pipe and are currently designed with a diameter dependant on the required flow. A typical stream crossing design for non-fish-bearing crossings is presented in Figure 5.1-1.

Fish-bearing stream crossings will be designed to minimize Permanent Alteration to, or Destruction of, fish habitat, and conform with Fisheries and Oceans Canada (DFO) Measures to Avoid Causing Harm to Fish and Fish Habitat. At Gander Outflow, which serves as a migration corridor between Goose and Rascal lakes, the crossing will be designed to ensure that it does not present a velocity barrier to migrating Arctic Grayling. Additional details on the Gander Outflow Crossing can be found in the WMP. Detailed design drawings for fish-bearing stream crossings will be approved by DFO and provided to the NWB and NIRB at least 60 days prior to construction. Additional measures for the protection of Fish and Fish habitat related to the construction and operations of all-weather roads, including the construction, monitoring, and maintenance of stream crossings, are presented in Sections 5.1.5, 7.1.3, and 7.2.1.

No water courses will be diverted for the purpose of building roads. The potential effects of roads on water movement on site are addressed in the WMP.

4.1.4 Measures to Prevent Permafrost Degradation

Roads have been designed, and will be constructed, to reduce the potential for permafrost degradation. In non-permafrost areas, it is common for road designs to incorporate both cuts and fills to establish the

final grade along the alignment. In permafrost, disturbing sensitive overburden soils and surface vegetation can result in thaw degradation and the creation of unstable ground. Consequently, the Project's all-weather roads will be constructed using limited cuts, with embankment construction favoured to establish the final grade where possible. Embankment material will be sourced from quarries near the road alignment.

Thermal modelling indicates that a run-of-quarry (or geochemically suitable waste rock) haul road thickness of 1.5 to 2-m thick will minimize deformation. Where thinner fill is used, and for roads constructed during summer, some thaw consolidation is expected. Once the active layer is re-established, which would likely be achieved within one or two seasons, no further settlement is expected. Where possible, roads will be constructed in winter months, when soils are frozen, to prevent permafrost degradation and limit differential settlement. More detail can be found in the MAD, Appendix F-2.

The potential for permafrost degradation associated with all-weather roads will be reduced through the incorporation of the following design road features and approaches to construction:

- Avoiding ice-rich, poorly-drained, frost-susceptible soil conditions where possible favouring higher, more competent, well-drained ground;
- Placing road fill directly on top of overburden soil and limiting cuts that can lead to thaw degradation;
- Removing accumulated snow before placing fill;
- Increasing road fill thickness in areas with thaw susceptible soils where necessary; and
- Constructing roads in winter months, when possible, over frozen ground conditions.

4.1.5 Measures to Protect Fish and Fish Habitat

Sabina is committed to ensuring that serious harm to fish is avoided where possible, in compliance with the *Fisheries Act*, when undertaking construction or operations near water. Fish-bearing or potentially fish bearing waterbodies were identified through baseline studies.

Sabina will implement all applicable recommended measures to reducing potential effects on fish and fish habitat, where possible, including those related to Project planning, erosion and sediment control, shoreline re-vegetation and stabilization, fish protection, and the operation of machinery, as per DFO's Measures to Avoid Causing Harm to Fish and Fish Habitat (http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html). The timing of in-water construction activities will conform, when possible, to Nunavut timing windows for the protection of fish and their habitat.

The construction and maintenance of all stream crossings, roads, and berms will follow DFO's Measures to Avoid Causing Harm to Fish and Fish Habitat. The exact management, monitoring, and mitigations measures to be used will be detailed in Sabina's Request for Review submitted to DFO. These requirements must be adhered to during construction activities, and may include:

- Design and plan in-water activities and works such that loss or disturbance to aquatic habitat is minimized and sensitive spawning habitats are avoided;
- Instream work will be conducted during approved timing windows presented in the DFO's advice, "Measures to Avoid Causing Harm to Fish and Fish Habitat" (DFO 2013);

- Where possible, approaches will be designed to be perpendicular to the watercourse to minimize loss or disturbance to riparian vegetation;
- Instream activities will be undertaken in isolation of open or flowing water, or when frozen, to maintain the natural flow of water downstream and avoid introducing sediment into the watercourse;
- Effective erosion and sediment control measures will be installed before starting work to prevent sediment from entering the waterbody;
- Site isolation measures (e.g., silt boom or silt curtain) will be used to contain suspended sediment where in-water work is required;
- Regular inspection and maintenance of erosion and sediment control measures and structures will be conducted during the course of construction;
- Repairs to erosion and sediment control measures and structures will be promptly completed if damage occurs;
- Removal of non-biodegradable erosion and sediment control materials will be completed once site is stabilized;
- Clearing of riparian vegetation will be kept to a minimum to avoid disturbance to the riparian vegetation and prevent soil compaction;
- If replacement rock reinforcement/armouring is required to stabilize eroding or exposed areas, appropriately-sized, clean rock will be installed at a similar slope to maintain a uniform bank/shoreline and natural stream/shoreline alignment;
- All construction equipment and supplies will be removed from the construction site upon Project completion;
- Machinery will be in a clean condition and maintained free of fluid leaks, invasive species, and noxious weeds;
- Whenever possible, machinery will be operated on land above the high-water mark or on ice in a manner that minimizes disturbance to the banks and bed of the waterbody;
- Whenever possible, machine fording of a watercourse will be limited to a one-time event (i.e., over and back), and only if no alternative crossing method is available. If repeated crossings of the watercourse are required, a temporary crossing structure will be constructed;
- Service machinery will be washed, refuelled, and fuel and other materials for the machinery stored, in such a way to prevent any deleterious substances from entering the water; and
- Screens will be used on all water intake hoses and pumps to prevent fish entrapment.

Disposal of excavated material will be disposed of in a location above the ordinary high-water mark to ensure that this material does not enter the watercourse. Efforts shall be made to minimize the duration of any in-stream works and minimize disturbance at stream crossings. This practice will prevent the release of sediment or sediment-laden water into water frequented by fish. Exposed landscape surfaces will be protected, where possible, by the installation of covering material like riprap, aggregate, or rolled erosion control products. All in-stream works for waterbodies frequented by fish shall be completed in accordance with the relevant DFO Guidelines.

Sediment loading in runoff will be minimized by the application of measures to intercept Total Suspended Solids before it reaches the freshwater environment. Sediment control measures could include:

- Buffer zones to trap sediment and to reduce flow velocities;
- Installation of synthetic permeable barriers, fibre rolls, and/or silt fences as required;
- Installation of check dams, gabions, and sediment basins to reduce flow velocities and encourage sediment deposition; or
- Locating stockpiles well away from watercourses.

The effectiveness of sediment and erosion control and runoff collection measures will be monitored on on a regular basis (daily or weekly, as appropriate) during construction.

The Environmental Manager, or their delegates, will be responsible for working with the construction team to ensure that culverts are installed in the correct location, appropriately aligned with respect to the watercourse, and installed in accordance with the approved design specifications. Adherence to these guidance documents will be verified through routine inspections of construction activities.

Once constructed, stream crossings will be monitored at periodically to ensure they remain free of barriers (e.g., ice, debris) that could affect fish passage including during freshet when the risk of ice jams is greatest (see Section 7.1.3).

4.1.6 Measures to Protect Wildlife

Mitigation and management measures aimed at minimizing the potential effects of the Project, including effects related to the construction and use of all weather roads, on wildlife are detailed in the WMMP. Mitigation and management measures for the protection of wildlife include road design (e.g., alignment, crossing structures), snowbank management, timing of operational periods, traffic management, precautions to be employed in the presence of wildlife, and wildlife mortality response and reporting.

4.2 WINTER ICE ROADS

Overland access between the Goose Property and the MLA is possible via the WIR each year while weather permits. During the Construction phase as well as prior to, equipment, materials, and supplies delivered mainly overland via the WIR to Goose Property will be staged at the MLA. WIRs are not planned to be constructed during temporary or permanent Closure; however, the WIR may be utilized during the Closure Phase to facilitate back-hauling of materials from Goose Property to the MLA for permanent disposal off-site.

The WIR between the MLA and Goose Property will be approximately 160 km long, travelling over both water and land. The George Exploration Camp could connect to this WIR by a winter spur road approximately 13 km in length.

Preparation of the WIR linking the MLA to Goose Property will be undertaken early winter. Once the WIR is ready for traffic, the equipment, materials, fuel, and supplies staged at the MLA will be transported by trucks over the WIR to Goose Property. The effective use and duration of a WIR depends on a number of variables, the most important of which are the climatic conditions (air temperatures and snowfall), surface conditions, the amount and type of traffic that will be using it, and wildlife concerns (e.g. caribou effects).

4.2.1 Design Criteria for Winter Ice Roads

The following design criteria were used for the WIRs:

- Road widths:

  - On Ice - minimum 30 m.
  - On land – minimum 10 m, with maximum 5% grade.
- Operating speeds (maximum 60 km/h):
  - Loaded Trucks (>50% of maximum load limit):
    - 35 km/h on ice.
    - 40 km/h on land.
    - 10 km/h on and off portages (i.e., shoreline-lake transition points).
  - Empty Trucks (<50% of maximum load limit):
    - 60 km/h on ice.
    - 40 km/h on land.
- Load limits:
  - Table 5.2-1 provides minimum ice thickness and total allowable weight for various vehicle configurations.

Table 5.2-1. Load Limit at 100% of Highway Legal Gross Vehicle Weight

Vehicle Configuration	Minimum Ice Thickness (cm)	Total Allowable Weight (kg)
2-Axle Hotshot	66	14,600
3-Axle Hotshot	73	22,500
6-Axle Tractor Trailer	89	46,500
8 Axle Super B Train	99	63,500

4.2.2 Winter Ice Road Alignment

Environmental conditions determine the route selected for WIR corridors including:

- Ice of a sufficient thickness to support equipment so that pumping and using water to build up ice will be limited.
- Snow/ice thickness on land will be sufficient to prevent damage to soil and vegetation.

Weather conditions permit safe transport of equipment and materials.

In response to TK and a request by the KIA, the winter ice road north of Tahikafflok Lake (Bathurst Lake) was realigned to address potential effects to riparian zones identified during two local focus group workshops (Cambridge Bay Hunter Focus Group 2012; Kugluktuk Hunter Focus Group 2012). Sabina realigned a 5.5 km section of the winter road alignment away from the area identified. The WIR route has been assessed for archaeological effects and the Vegetation Monitoring Plan addresses the vegetation monitoring associated with the route including the collection of information prior to initial use.

4.2.3 Winter Ice Road Construction and Use

The "Guidelines for Safe Ice Construction" published by the Northwest Territories Department of Transportation (2015), as well as the Land Use Guidelines published for Government of Northwest Territories and Nunavut (INAC 2010) will guide the construction and maintenance requirements of the WIR. Further details on studies, reports, and plans relevant to the design of WIRs are presented in Section 2.1.

The WIR is anticipated to be constructed in early winter when the subgrade is frozen to a sufficient depth and the ice can support light tracked vehicles. Construction of the WIR will take approximately 45 days utilizing two work fronts from Goose Property and the MLA.

The WIR will be constructed over land and over ice. Overland crossings rely on a frozen subgrade to support the vehicle loads and a prepared surface layer to provide a level driving surface. Surface layers usually consist of compacted snow and/or ice where available. Ice-capped snow roads will be constructed for highway legal loads (e.g., B-trains). A discontinuous pad of granular fill may be required over short areas of rough terrain or where there is insufficient snow cover to create a smooth surface. If this is insufficient to provide an acceptable surface and gradient, additional grading effort may be required to create a road that meets the design criteria. Where fill material is required it will be sourced from approved quarries or borrows with geochemically suitable material as outlined in the Borrow Pits and Quarry Management Plan.

Roads that will be built over floating ice covers on lakes and rivers will be constructed based on the vehicles and loads to be transported. For B-train used, WIRs will be built to a minimum 30 m cleared width. This width is necessary to provide a 5-m buffer along the edges to separate the vehicle traffic from the thinner ice found under snow banks. This minimum width also provides additional lane width for when roads are blown with drifted snow. Snow banks will be managed carefully as they are an additional load on the ice, and the thinner ice underneath is prone to cracking and flooding. The final cleared width to account for floating ice covers will be determined during the next stages of the Project.

In high wind locations, it is often desirable to initially open the road to widths greater than the 30 m, which will provide space for the operational width to narrow due to snow drifting throughout the season to a minimum width of 30 m. The final cleared width to account for high wind locations may vary based on conditions or Project phase. Maintenance will be required over the operating season, with crews accommodated at both the MLA and Goose Property.

4.2.4 Water Use for Winter Ice Road Construction and Maintenance

Water will be drawn from pre-established freshwater sources along the alignment of the WIR. Seawater may also be used from Bathurst inlet, but only for application on the sea ice itself if not desalinated. Seawater use is not counted towards the Water Licence allotment.

Water withdrawal from freshwater sources will adhere to pre-determined maximum withdrawal allotments based on bathymetric data and DFO's Protocol for Winter Water Withdrawal from Ice-covered Waterbodies in the Northwest Territories and Nunavut (DFO 2010), and extensive evaluation and conversations with regulators. Total freshwater usage (i.e., cumulative usage from all sources) for WIR construction and maintenance will be not exceed the annual limits set in the Water Licence in any year. The actual annual volume used will depend on environmental conditions and operational needs.

A technical memorandum will be submitted to the NWB each year, 60 days prior to WIR construction, outlining the WIR plan and water source information, in accordance with 2AM-BRP1831 Part Part E, Item 13.

4.2.5 Measures to Protect Fish and Fish Habitat

WIR construction will follow the DFO advice, "Measures to Avoid Harm to Fish and Fish Habitat" (DFO 2013) and will adhere to the following guidelines based on DFO Operational Statements:

- Use existing trails or WIRs wherever possible as access routes to limit unnecessary clearing of additional vegetation and prevent soil compaction;

- Construct approaches and crossings perpendicular to the watercourse wherever possible;
- Construct ice bridge and snow fill approaches using clean, compacted snow and ice to a sufficient depth to protect the banks of the lake, river, or stream;
- Install sediment and erosion control measures before starting work to prevent the entry of sediment into the watercourse. Inspect them regularly during the course of construction and decommissioning activities and make all necessary repairs if any damage occurs;
- Operate machinery on land or on ice and in a manner that minimizes disturbance to the banks of the lake, river or stream;
- Ensure that the intakes are sized and adequately screened to prevent debris blockage and fish entrapment;
- Crossings do not impede water flow at any time of the year;
- When the crossing season is over and where it is safe to do so, create a v-notch in the centre of the ice bridge to allow it to melt from the centre and also to prevent blocking fish passage, channel erosion and flooding. Compacted snow should be removed from snow fills prior to the spring freshet;
- Stabilize any waste materials removed from the work site to prevent them from entering the lake, river, or stream. This could include covering spoil piles with biodegradable mats or tarps;
- The site should be stabilized using effective sediment and erosion control measures. In areas with permafrost, care should be exercised to ensure these measures do not cause thawing or frost heave; and
- Water withdrawal will adhere to additional DFO guidelines, including ensuring that the intakes are sized and adequately screened to prevent debris blockage and fish mortality; mesh size will not be larger than 2.54 mm.

4.2.6 Measures to Protect Wildlife

Mitigation and management measures aimed at minimizing the potential effects of the Project, including effects related to the construction and use of WIRs, on wildlife are detailed in the WMMP. Mitigation and management measures for the protection of wildlife include road design (e.g., alignment, crossing structures), snowbank management, timing of operational periods, traffic management, precautions to be employed in the presence of wildlife, wildlife mortality response and reporting, and the potential hunters to use WIRs for harvesting. Monitoring for hunter usage of WIRs will be conducted as described in Section 7.3.

4.3 AIRSTRIPS

Airstrips will be constructed and operated at both the MLA and the Goose Property. These private airstrips, in addition to private ice airstrips, will serve as the main air access to the Property throughout the life of the Project and will be classified as a "registered aerodrome."

4.3.1 Design Criteria for Airstrips

Airstrip design will be in accordance with Transport Canada's Aerodrome Standards and Recommended Practices (Transport Canada 2005). The construction of the airstrips will follow generally accepted good engineering practices for building airstrips in permafrost areas of the Northwest Territories and Nunavut.

Both airstrips will be all-weather strips with an apron capable of servicing passenger and large cargo aircraft and will be equipped with lights, communications equipment, and instrumentation in accordance with appropriate Federal regulations. The existing exploration airstrip at Goose Property will be expanded up to 1,830 m long and 60 m wide. The MLA airstrip is anticipated to be up to 1,524 long and 40 m wide.

Airstrip design considered wind direction and speeds, terrain, topography, ground conditions, and aimed to minimize effects to vegetation, wildlife, fish and archaeological sites.

4.3.2 Construction of Airstrips

Due to the contiguous permafrost and possible thaw degradation, the airstrips will be constructed with embankment fills of approximately 2 m thick. The fill material will be geochemically suitable quarried rock or waste rock. This will be topped by a compacted granular base trafficable layer.

4.3.3 Water Crossings

The Goose Airstrip will incorporate non-fish-bearing culvert crossing similar to all-weather road water crossings described in Section 5.1.3. Protocols for the construction and operation of water crossings along airstrips will follow the protocols outlined for all-weather roads in Section 5.1.3.

4.3.4 Water Use for Airstrips

Water may be used for dust suppression on airstrips. Water use protocols for airstrips will follow those outlined in in Section 5.1.5.

4.3.5 Measures to Prevent Permafrost Degradation

Airstrips have been designed and will be constructed to reduce the potential for permafrost degradation. Measures to prevent permafrost degradation related to airstrips follow the protocols outlined for all-weather roads in Section 5.1.4.

4.3.6 Measures to Protect Fish and Fish Habitat

Sabina is committed to ensuring that serious harm to fish is avoided where possible in compliance with the Fisheries At when undertaking construction or operating near water. Construction and operations of airstrips will follow the protocols outlined for all-weather roads in Section 5.1.5.

4.3.7 Measures to Protect Wildlife

Mitigation and management measures aimed at minimizing the potential effects of the Project, including effects related to the construction and use of Airstrips, on wildlife are detailed in the WMMP. Mitigation and management measures for the protection of wildlife include design, snowbank management, timing of operational periods, traffic management, precautions to be employed in the presence of wildlife, and wildlife mortality response and reporting.

5. Traffic Management and Road Safety

Traffic Management and Safety protocols for all-weather roads and airstrips will be developed and implemented by the Health and Safety Manager with input from the Environment Manager or his/her delegate and, in the case of airstrips, the person responsible for aviation safety or his/her delegate. The protocol(s) will address general regulations, enforcement, signage, traffic management, and rules of the road.

Traffic Management and Road Safety protocols for WIRs will be developed and implemented by the contractor responsible for managing the WIR. Traffic management and road safety rules for WIRs will drawn on practices that have ben proven to be effective by the Tibbitt to Contwoyto Winter Road Joint Venture, Winter Road Regulations, and Rules of the Roads. The protocol will address general regulations, enforcement, signage, traffic management, and rules of the road.

5.1 ACCIDENTS AND MALFUNCTIONS

Sabina's emphasis for traffic management and road safety will be on preventing accidents and malfunctions, while keeping resources close at hand to respond to emergencies on the roads in a timely manner.

For example, Sabina will verify its vehicles are in good working order before road use is allowed. Sabina will also train its employees on road safety and emergency response (first aid, firefighting, spill response, etc.). Emergency response equipment will be carried in all Sabina vehicles. This equipment will include survival gear, emergency first aid equipment, and initial spill response equipment. By educating and protecting its workers, Sabina will lead by example in road safety. Additional details on Emergency Response preparedness and procedures can be found in the Risk Management and Emergency Response Plan.

5.2 SPILL PREVENTION AND RESPONSE

Training and awareness are two major elements of spill prevention. All site staff and contractors will review the contents of the Spill Contingency Plan during their on-site orientation and will be informed of where copies of the Plan are stored. The mandatory site orientation will provide hazard awareness training, identify the locations of spill kits and other response equipment, and discuss appropriate application. A more detailed description of the training to be provided to site staff and Spill Response protocols are provided in the Spill Contingency Plan.

Spill prevention practices specific to roads include:

- Inspection and maintenance of roadways and vehicles (Section 7);
- Adhering to traffic management and road safety practices; and
- Ensuring proper storage of materials during transportation.

Spill response will be implemented by environmental staff who will advise, document, and report on initial response and follow-up actions. Additional details can be found in the Spill Contingency Plan.

5.3 MEASURES FOR THE PROTECTION OF WILDLIFE

Mitigation and management measures aimed at minimizing the potential effects of traffic on wildlife are detailed in the WMMP. Mitigation and management measures for the protection of wildlife from traffic include the timing of operational periods of WIRs, traffic management, precautions to be employed in the presence of wildlife, and wildlife mortality response and reporting.

6. Inspection, Maintenance, and Monitoring of Roads and Airstrips

Sabina has sole responsibility for the ongoing inspection and maintenance of all components of roads and airstrips, including the roadbed, airstrip foundations, culverts, water crossings, and quarry sites. The Site Supervisor, or their designate, will be responsible for ongoing inspection and maintenance. This will include regular inspection and maintenance of transportation infrastructure, including service roads, haul roads, road crossings, water crossings, signage, and any service/emergency camps located along the WIRs. The following is a summary of the procedures that will be applied.

6.1 ALL-WEATHER ROAD AND AIRSTRIP MAINTENANCE AND MONITORING

Sabina recognizes that a good inspection program will lead to the early identification of areas of roads and airstrips where improvements are necessary. The early resolution of any deficiencies will result in less ongoing maintenance and repair of the infrastructure.

6.1.1 Structural Maintenance and Monitoring

The shoulders of all-weather roads and airstrips will be inspected regularly during the summer period for evidence of seasonal freeze and thaw adjacent to the toe of the road embankment. Such movements are expected and may lead to longitudinal cracking and thaw settlement especially for portions of the road founded on thaw-susceptible (ice-rich) soil. When such areas are discovered, the affected area will be repaired using geochemically and geotechnically suitable granular material and/or crushed rock. Sabina will maintain stockpiles of such material for this purpose.

All-weather roads and airstrips will be inspected for signs of accumulating, ponded water, either on the surface or along the sides. Where noticed, the Site Supervisor will evaluate and monitor the accumulation to determine why water is accumulating in these areas. Based on these evaluations, the Site Supervisor will take remedial action where and when necessary to correct the cause of such ponding, such as grading of the surface to remove areas of ponding or installation of additional culverts if the road is causing excessive water ponding. Additional details on the management of water along roads can be found in the WMP.

All-weather road and airstrip surfaces will be maintained with regular grading and distribution of gravel when needed. Granular surfacing required for yearly maintenance of the all-weather roads and airstrips will be sourced and stockpiled from local quarries in accordance with the Borrow Pits and Quarry Management Plan

In fall, winter, and spring, maintenance will be adjusted according to the weather conditions. The Project is expected to experience snow drifts due to strong winds and snow accumulation over the winter season Snow clearing along the roads will be completed to ensure that the roads can be operated safely. The manner in which the snow is cleared will also take into account the road configuration to ensure that snow accumulation will not cause any complications during the freshet (see Section 7.1.3).

Inspection frequency will be increased during the following critical time periods:

- Just prior to spring freshet to ensure that the culverts and stream crossings are ready to accommodate the rapid spring thaw;

- During the spring freshet to ensure that the culverts and stream crossings are not impeding spring freshet and to initiate action when and where required to prevent wash outs; and
- Just after heavy rainfall events to monitor water accumulation, to ensure that culverts and diversion/collection channels and ponds are passing precipitation as planned and to initiate action when and where required to prevent erosion and wash outs.

Roads will be cleared of snow drifts as needed to ensure a safe running surface is maintained.

In addition, all Sabina employees and contractors are responsible for reporting any road or airstrip maintenance problem or hazardous conditions to their supervisor. Regularly scheduled safety meetings incorporate discussion and reminders related to all-weather road and airstrip use, operation, and maintenance.

6.1.2 Dust Management and Monitoring

The amount of dust generated along roads and airstrips is dependent on the dryness of the surface, the number, weight, and speed of vehicles, and maintenance of the driving surface. Dust will not pose a significant concern in the winter and early spring when snow and ice cover road surfaces. The warmer and drier late spring and summer months will lead to more dust generation. It is expected that dust from all-weather roads will not pose a significant problem during the colder winter and early spring months when snow and ice cover roadways.

Regular grading of the roads and airstrips combined with the addition of granular material to the surface will improve road safety and reduce dust. Dust mitigation measures may be implemented in areas that are prone to high dust levels, in areas where visibility is impaired for drivers, in areas where dust deposition may otherwise affect fish habitat and/or water quality, or at times that dust generation is high due to weather conditions. Mitigation measures could involve grading the road surface, placement of new surface gravel, and/or applying water or dust suppressant on the road surface.

Freshwater may be used for dust suppression for all-weather roads, the airstrip, and pads at the Goose Property. At the MLA, water will be sourced from Bathurst Inlet desalination, through freshwater sources may be used instead. All water usage will be documented and freshwater usage will remain within applicable annual Water Licence limits.

Approved chemical dust suppressants may also be used in accordance with the Environmental Guidance for Dust Suppression on Unpaved Roads (GN 2014).

All Sabina employees and contractors are instructed to report any hazardous conditions to Project Management. Additional details on dust management and monitoring can be found in the Mine Waste Rock Management Plan and Quality Monitoring and Management Plan.

6.1.3 Culvert Maintenance and Monitoring

During Operations, the watercourse crossing maintenance and monitoring program will include the following components:

- A regular inspection program to identify issues relating to watercourse crossings such a structural integrity and hydraulic function;
- An event inspection program to track the effects of large storm events on watercourse crossings, such as structural integrity and hydraulic function; and
- Timely repairs and adjustments.

During Operations, routine spring snow management will include the safe removal of any snow and ice that accumulates at both end of the culverts so that water at freshet can move freely through the culverts and waterways. Proper techniques will be used to ensure that ground disturbance is limited during snow and ice removal. Culverts and stream crossings will be inspected just prior to and during freshet to ensure that the culverts and stream crossings are sufficiently clear to accommodate the rapid spring thaw and that action will be initiated (including removing accumulated ice) where required.

Prior to Freshet, water crossings will have snow removed from ice surfaces on the up- and downstream sides of crossings to allow free flow of water prior to freshet. Where a culvert ice blockage is identified during inspection and if watercourse crossings can't accommodate the spring freshet, culvert thawing (steaming) will be considered as a maintenance measure.

Routine crossing inspections will be performed during the ice-free period, from the onset of freshet (approximately mid-May/beginning of June) until fall freeze-up (which typically occurs in October). Each watercourse crossing will be visually inspected to:

- Identify defects, cracks, or any other risks to structural integrity of the infrastructure. Particular attention will be paid to the inlet and outlet structures of culverts;
- Identify potential sources of sediment transport at crossings;
- Identify sediment or other debris accumulation impeding the free flow of water through the crossings. Maintenance operations will consist of hand removal of accumulated debris and repairing damage as soon as possible; and
- Identify bed erosion or scour around the watercourse crossing of the upstream and downstream channel. Any erosion concerns will be addressed as soon as possible.

Inspection results will be recorded to help track changes in conditions over time.

If required, maintenance operations will consist of undertaking remediation of any detected problems and repairing damage as soon as possible. Culvert maintenance will be conducted following the DFO's advice, "Measures to Avoid Causing Harm to Fish and Fish Habitat" (DFO 2013).

6.1.4 Closure

In the event of temporary Closure, service roads will be inspected and maintained to ensure protection of the environment. This includes inspection and maintenance of ditches, spillways and culverts and employing erosion and sediment control measures to verify proper operation or to implement contingency measures. Camp facilities will be operated and maintained to support this effort. The level of effort involved in maintaining the site in a state of temporary Closure will depend upon the Project phase.

In the event of permanent Closure, procedures outlined in the approved Interim Closure and Reclamation Plan will be followed.

Airstrips will remain functional with a gravel surface for use during Post-Closure monitoring. Final closure of the airstrips will be similar to the all-weather roads and is described it the Interim Closure and Reclamation Plan.

6.2 WINTER ICE ROADS INSPECTION AND MAINTENANCE

During WIR operations, WIRs will be inspected and maintained in accordance with the "Guidelines for Safe Ice Construction" (GNWT DoT 2015). These regulations state that ice thickness testing inspections

should be done once a week on snow roads, twice a week on ice roads, and daily on ice bridges. Test hole spacing and frequency as recommended in the field guide are presented below for each WIR construction phase in Table 7.2-1.

Any effects to vegetation and soil underlying the WIR will be monitored as part of the Vegetation Monitoring Plan.

Table 7.2-1. Field Guide for Ice Construction Safety Recommended Ice Testing

	Preconstruction	Construction	Operations and Maintenance
	Initial test run	From start of construction until road is opened to traffic	This may overlap with construction activities at lower load levels
Rivers	If GPR is used, test holes are only required for calibration and for mapping of thin areas 30 meters between test holes along centre line	If GPR is used, test holes are only required for calibration and for mapping of thin areas 30 meters between test holes along alternate edges	If GPR is used, test holes are only required for calibration and for mapping of thin areas 30 meters between test holes along alternate edges Look for thin areas caused by river current
Lakes	If GPR is used, test holes are only required for calibration If within 250 metres of shore: 30 meters between test holes along centre line If more than 250 metres from shore: 250 metres between test holes along centre line	If GPR is used, test holes are only required for calibration If within 250 metres of shore: 30 metres between test holes along alternate edges If more than 250 metres from shore: 250 metres between test holes along alternate edges	If GPR is used, test holes are only required for calibration and for mapping of thin areas 250 metres between test holes along alternate edges
Mackenzie Delta	If GPR is used, test holes are only required for calibration 250 metres between test holes along centre line	If GPR is used, test holes are only required for calibration 250 metres between test holes along alternate edges	If GPR is used, test holes are only required for calibration and for mapping of thin areas

Source: Northwest Territories Department of Transportation. "Guidelines for Safe Ice Construction" 2015.
GPR = ground penetrating radar.

6.2.1 Stream Crossing Inspection and Maintenance

In accordance with DFO guidance, snow and ice accumulation at WIR crossings will be minimized by cutting a v-notch in the WIRs at the crossings prior to melt. Decommissioned ice bridges and snow fills associated with WIRs at fish-bearing streams will be monitored during freshet to ensure stream channels remain clear for fish during spring migration. If present and practical, obstructions will be removed to ensure fish passage is unimpeded.

6.3 PUBLIC USE OF WINTER ICE ROAD CORRIDORS

All Project roads, including the WIR, are private and not intended for public use. Incidental observations of members of the public using the WIR will be recorded along with a description of the activities observed (e.g., travelling, hunting), when possible. Other evidence of hunting from the WIR will also be recorded. Incidental observations will be reported in the Annual Report to the NIRB and trends in usage will be assessed. If warranted, mitigation measures aimed at reducing public usage of the WIR will be developed and outlined in the Annual Report to the NIRB and implemented thereafter.

6.4 WILDLIFE MONITORING

Wildlife monitoring programs related to the construction and use of all-weather roads, WIRs, and airstrips are detailed in the WMMP. Wildlife monitoring will include maintaining a log of sightings that detail the kind of wildlife that was observed, an estimate of numbers, and the location of the sighting (to the nearest kilometre marker along the all-weather roads or WIRs). The incidental sighting data will be aggregated and reported in the annual WMMP Program Report.

7. Adaptive Management

This Plan represents an adaptive approach to understanding the effects of the Project on the landscape and the species that live there. In this context, the Plan is part of a continually evolving process that relies not only on the efficacy of data collection and analytical results, but is also dependent on feedback from the communities, government, Aboriginal groups, and the public. Having an adaptive and flexible program allows for appropriate and necessary changes to the design of monitoring studies, and the mitigation and monitoring plans. Some changes may come about through the observation of unanticipated effects or inadequacies in the sampling methods to detect measurable effects. Other changes may result from ecological knowledge acquired through working with Aboriginal community members and discussions with Elders, both in the field and through workshops.

Sabina is committed to considering and incorporating Traditional Knowledge into the Plan. The incorporation of Traditional Knowledge will occur throughout all stages of the Plan, including identification of mitigation measures, monitoring study design, data collection, and follow-up programs to obtain feedback.

Adaptive management will be triggered in real-time, based on site observations. Examples of adaptive management include road and water-crossing maintenance, the application of dust suppressants, speed limit reductions when excess dust is observed, changes in traffic management, increased patrolling, and addressing pooling water during freshet or heavy rainfall events. Should monitoring programs indicate unanticipated effects related to road and airstrip construction and operations, additional management measures may be implemented, and this Plan may be modified to reflect improved practices. If required, adaptive management measures undertaken to address public use of WIRs will be presented in the Annual Report.

Monitoring related to potential effects of roads and airstrips will also take place under a number monitoring programs targeting various potential effects. This includes the AQMMP for air quality-related effects, the WMMP for wildlife-related effects, the AEMP for aquatic effects, and the WMP for water management-related effects, and the SEMP for usage by non-Project personnel.

8. Plan Revision and Reporting

This Plan will be reviewed on a regular basis to incorporate any lessons learned, major changes to facility operations or maintenance, and the results of monitoring programs. Any updates to the RMP will be filed with the Annual Reports submitted under the active Type A Water Licence and Project Certificate.

Employees will be informed of relevant updates and the updated RMP will be located in a designated area at each site.

Sabina will retain all raw data records and annual reporting for at least two years in digital format. The updated RMP, raw data, and annual reporting will be made available by Sabina at all times for review by the lands and waters inspectors, the NWB, and Environment and Climate Change Canada.

9. References

DFO (Fisheries and Oceans Canada). 2010. Protocol for Winter Water Withdrawal from Ice-Covered Waterbodies in the Northwest Territories and Nunavut. June 2010.

DFO. 2013. Advice, Measures to Avoid Causing Harm to Fish and Fish Habitat.

Environment Canada. 2011. *Analysis and Air Quality Section: National Air Pollution Surveillance Program (NAPS).* http://www.ec.gc.ca/rnspa-naps/ (accessed July 2013).

GNWT DoT (Department of Transportation of Northwest Territories). 1993. G Environmental Guidelines for the Construction, Maintenance and Closure of Winter Roads in the Northwest Territories. October 1993.

GNWT DoT. 2015. Guidelines for Safe Ice Construction. February 2015.

GN (Government of Nunavut Department of Environment). 2014. Environmental Guidance for Dust Suppression on Unpaved Roads. Available online: http://env.gov.nu.ca/sites/default/files/guideline_-_dust_suppression_on_unpaved_roads_2014.pdf. April 2014.

INAC (Indigenous and Northern Affairs Canada). 2010. Northern Land Use Guidelines – Access: Roads and Trails. January 2010. ISBN: 978-1100-14743-7. Link.

Roads and Transportation Association Canada. 1986. Manual of Geometric Design Standards for Canadian Roads.

Tibbitt to Contwoyto Winter Road Joint Venture, Winter Road Regulations and Rules of the Road, current version.

Transport Canada. 2015. Aerodromes Standards and Recommended Practices (TP 312) 5th Edition. Revised July 2015.

Appendix A. Applicable Legislation

Appendix A. Applicable Legislation

Acts	Regulations	Guidelines
Federal		
Canadian Environmental Protection Act (1999 c.33)	Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations (SOR/2008-197) Environmental Emergency Regulations (SOR/2003-307) Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations (SOR/2005-149) Interprovincial Movement of Hazardous Waste and Hazardous Recyclable Material Regulations (SOR/2002-301) Federal Registration of Storage Tank Systems for Petroleum Products and Allied Petroleum Products on Federal Lands or Aboriginal Lands Regulations (SOR/97-10) Fuels Information Regulations, No. 1 (SOR/C.R.C., c. 407) Sulphur in Diesel Fuel Regulations (SOR/2002-254) Sulphur in Gasoline Regulations (SOR/99-236)	Canadian Council of the Ministers of Environment - Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products Notice with respect to substances in the National Pollutant Release Inventory Canada-Wide Standards for Petroleum Hydrocarbons (PHC) in Soil
Canada Water Act (1985 c.11)		
Canada Wildlife Act (1985 w9)	Wildlife Area Regulations (C.R.C., c. 1609)	
Species at Risk Act (2002 c.29)		(Eskimo Curlew – endangered)
Migratory Birds Convention Act (1994 c.22)	Migratory Birds Regulations (C.R.C., c. 1035) Migratory Bird Sanctuary Regulations, [C.R.C., c.1036]	Avoidance Guidelines: • Reducing Risk to Migratory Birds • Technical Information • Guidelines to Avoid Disturbance to Seabird and Waterbird Colonies in Canada • Birds at Sea • General Nesting Periods of Migratory Birds in Canada

Acts	Regulations	Guidelines
Fisheries Act (1985, c. F-14)	Metal Mining Effluent Regulations (SOR/2002-2222) Applications for Authorization Under Paragraph 35(2)(B) of the Fisheries Act Regulations Aquatic Invasive Species Regulations (SOR/2015-121) Regulations Establishing Conditions for Making Regulations Under Subsection 36(5.2) of the Fisheries Act (SOR/2014-91)	Fisheries Protection Policy Statement Framework for Assessing the Ecological Flow Requirements to Support Fisheries in Canada DFO Protocol for Winter Water Withdrawal from Ice-covered Waterbodies in the Northwest Territories and Nunavut Implementing the New Fisheries Protection Provisions under the *Fisheries Act* - Discussion Paper General Fish-out Protocol for Lakes and Impoundments in the Northwest Territories and Nunavut Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters Freshwater Intake End-of-Pipe Fish Screen Guideline Standard Operating Procedure – Clear Span Bridges
Explosives Act (1985 c.E-17)	Ammonium Nitrate and Fuel Oil Order (C.R.C., c. 598) Explosives Regulations (C.R.C., c. 599)	
Navigation Protection Act (R.S. 1985 c. N-22, s. 1; 2012, c.31, . 316)	Navigable Waters Bridges Regulations (C.R.C., c. 1231) Navigable Waters Works Regulations (C.R.C., c. 1232)	List of Scheduled Waters (Schedule in the Act)
Transport of Dangerous Goods Act (1992, c. 34)	Transportation of Dangerous Goods Regulations (SOR/2001-286)	
Territorial Lands Act (R.S. *1985, c. T-7)*	Northwest Territories and Nunavut Mining Regulations (C.R.C., c. 1516) Territorial Lands Regulations (CRC, c 1525) Territorial Land Use Regulations (CRC, c 1524) Territorial Quarrying Operations, [C.R.C., c. 1527] Northwest Territories Mining District and Nunavut Mining District Order	Northern Land Use Guidelines: Administrative Process
Nunavut Waters and Nunavut Surface Rights Tribunal Act (2002, c.10)	Nunavut Waters Regulations (SOR/2013-69)	
Nunavut Act (1993 c.28)	Nunavut Archaeological and Paleontological Sites Regulations (SOR/2001-220)	
Nunavut Land Claims Agreement Act (1993, c.29)		

Acts	Regulations	Guidelines
Territorial		
Environmental Protection Act (RSNWT (nu) 1988, c E-7)	*Spill Contingency Planning and Reporting Regulations* (NWT Reg (Nu) 068-93) The removal of hazardous materials will require the registration with the Government of Nunavut, Department of Environment as a waste generator as well as carrier (if applicable) prior to transport. Asphalt Paving Industry Emission Regulations, R.R.N.W.T. 1990 c. E-23	Guideline on Dust Suppression Guideline for the General Management of Hazardous Waste in Nunavut Guideline for Industrial Waste Discharges in Nunavut Guideline for Air Quality – Sulphur Dioxide and Suspended Particulates Guideline for the Management of Waste Antifreeze Guideline for the Management of Waste Batteries Guideline for the Management of Waste Paint Guideline for the Management of Waste Solvents Guideline for Industrial Projects on Commissioner's land Canada-Wide Standards for Particulate Matter (PM) and Ozone Canada-Wide Standards for Petroleum Hydrocarbons (PHC) In Soil
Historical Resources Act RSNWT (Nu) 1988, c. H-3)		
Wildlife Act (RSNWT (Nu) 1988, c W-4)	*Wildlife General Regulations* (NWT Reg (Nu) 026-92) *Wildlife Licences And Permits Regulations* (NWT Reg (Nu) 027-92) *Wildlife Management Barren-Ground Caribou Areas Regulations* (NWT Reg (Nu) 099-98) *Wildlife Management Grizzly Bear Areas Regulations* (NWT Reg (Nu) 155-96) *Wildlife Management Zones Regulations* (RRNWT (Nu) 1990 c W-17) *Wildlife Regions Regulations* (NWT Reg (Nu) 108-98) Critical Wildlife Areas Regulations, R.R.N.W.T. 1990 c. W-3 Polar Bear Defence Kill Regulations, N.W.T. Reg. 037-93 Wildlife Management Muskox Areas Regulations, R.R.N.W.T. 1990 c. W-11 Wildlife Management Polar Bear Areas Regulations, R.R.N.W.T. 1990 c. W-13 Wildlife Sanctuaries Regulations, R.R.N.W.T. 1990 c. W-20 Wildlife Preserves Regulations, R.R.N.W.T. 1990 c. W-18	

Acts	Regulations	Guidelines
Territorial Parks Act (RSNWT (Nu) 1988, c T-4)	*Territorial Parks Regulations* (RRNWT (Nu) 1990 c T-13)	
Scientists Act (RSNWT (Nu) 1988 c S-4)	*Scientists Act Administration Regulations* (NWT Reg (Nu) 174-96)	
Commissioner's Land Act (RSNWT 1988, c C-11)	*Commissioner's Airport Lands Regulations* (NWT Reg (Nu) 067-97) *Commissioner's Land Regulations* (RRNWT 1990, c C-13)	
Mine Health And Safety Act (SNWT (Nu) 1994, c 25)	*Mine Health And Safety Regulations* (NWT Reg (Nu) 125-95) Mine Health and Safety Regulations, amendment, Nu. Reg. 016-2003	
Workers' Compensation Act (RSNWT, 1988, c. W-6)	*Workers' Compensation General Regulations* (Nu Reg 017-2010)	
All-Terrain Vehicles Act (RSNWT (Nu) 1988, c A-3)	*All-Terrain Vehicles Regulations* (RRNWT (Nu) 1990 c A-1)	
Apprenticeship, Trade And Occupations Certification Act (RSNWT (Nu) 1988, c A-4)	Apprenticeship, Trade And Occupations Certification Regulations (RRNWT (Nu) 1990 c A-8) Occupation Designation Order, N.W.T. Reg. 026-96 Trade Advisory Committees Order, R.R.N.W.T. 1990 c. A-9 Trade Designation Order, R.R.N.W.T. 1990 c. A-10	
Electrical Protection Act (RSNWT (Nu) 1988, c E-3)	*Electrical Protection Regulations* (RRNWT 1990 c. E-21)	
Explosives Use Act (RSNWT (Nu) 1988, c E-10)	*Explosives Regulations* (RRNWT (Nu) 1990 c E-27)	
Fire Prevention Act (RSNWT (Nu) 1988, c F-6)	Fire Prevention Regulations (RRNWT (Nu) 1990 c F-12) Propane Cylinder Storage Regulations, N.W.T. Reg. 094-91	
Hospital Insurance And Health And Social Services Administration Act (RSNWT 1988, c T-3)	Territorial Hospital Insurance Services Regulations (RRNWT (Nu) 1990 c T-12) Baffin Regional Health and Social Services Board Order, N.W.T. Reg. 059-98 Hospital Standards Regulations, R.R.N.W.T. 1990 c. T-6	
Labour Standards Act (RSNWT (Nu) 1988, c L-1)	*Various*	
Motor Vehicles Act (RSNWT (Nu) 1988, c M-16)	*Large Vehicle Control Regulations* (RRNWT (Nu) 1990 c M-30) *Motor Vehicle Registration And Licence Plate Regulations* (RWT Reg (Nu) 054-94)	

Acts	Regulations	Guidelines
Petroleum Products Tax Act (RSNWT (Nu) 1988, c P-5)	*Petroleum Products Tax Regulations* (RRNWT (Nu) 1990 c P-3)	
Public Health Act (RSNWT (Nu) 1988, c P-12)	*Camp Sanitation Regulations* (RRNWT (Nu) 1990 c P-12) *General Sanitation Regulations* (RRNWT (Nu) 1990 c P-16) *Public Water Supply Regulations, R.R.N.W.T. 1990 c. P-23* *Public Sewerage Systems Regulations, R.R.N.W.T. 1990 c. P-22*	
Public Highways Act (RSNWT (Nu) 1988, c P-13)	*Highway Designation And Classification Regulations* NWT Reg (Nu) 047-92)	
Safety Act (RSNWT 1988, c.S-1)	*General Safety Regulations, Amendment NU Reg 021-2000* (RRNWT (Nu) 1990 c S-1) Asbestos Safety Regulations, N.W.T. Reg. 016-92 General Safety Regulations, R.R.N.W.T. 1990 c. S-1 Safety Forms Regulations, N.W.T. Reg. 102-91 Silica Sandblasting Safety Regulations, N.W.T. Reg. 015-92 Work Site Hazardous Materials Information System Regulations, R.R.N.W.T. 1990 c. S-2	
Transportation Of Dangerous Goods Act (1990. RSNWT (Nu) 1988, c 81 (Supp))	*Transportation Of Dangerous Goods Regulations* (1991, NWT Reg (Nu) 095-91)	Emergency Response Assistance Plans (ERAPs)

Applicable Legislation and Guidelines for the Back River Project

Appendix F Site Update

Sabina
GOLD & SILVER CORP.

September 14, 2020

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RE: Back River Project 2020 Site Update

On January 30, 2020, Sabina provided notice to the NIRB and others that Sabina would be resuming operations at the Back River Project (the Project) on or about March 3. Shortly after Back River re-opened and our exploration program was beginning to ramp up, Sabina decided to delay the planned 2020 program as a result of the COVID-19 pandemic. Our initial team was already on site, but drills were not yet turning. The decision to shut down camp and delay the program was made to ensure the health and safety of our employees, contractors, their families, and the communities they come from. We were, and remain, very cognizant of the COVID related risks the Kitikmeot communities face and reducing that risk was an important part of our decision.

Over the next 3 months, Sabina worked diligently to prepare for the safe recommencement of site activities at the Back River Project. Sabina engaged with the Kitikmeot Inuit Association (KIA), Federal Government, the Government of Nunavut including the Chief Medical Health Officer, Public Health, Economic Development & Transportation, and many others. Once Sabina felt that the pieces were in place to ensure safe recommencement of activities, Sabina provided notification to the NIRB and others of our plans to re-open site on June 30 with the first major inbound aircraft of staff on July 7.

With the Project now successfully and safely open for several months, we wanted to take this opportunity to provide an update to the relevant parties. This update is meant to provide transparency on ongoing exploration and initial construction activities at the Back River Project, plans in 2020 as well as site-specific conditions at the Goose Property, George Property, and the Marine Laydown Area. In addition we have provided information on environmental monitoring programs and baseline data collection as well as the COVID-19 protocols established. As we understand that most, if not all inspections will be cancelled this year, we are hopeful this document provides insight into our activities and ongoing compliance. Sabina does note, that as

communicated to the NIRB on June 25, 2020, we do not anticipate any material changes to our monitoring as a direct result of COVID-19.

COVID Protocols Established

Sabina first established a COVID-19 Task Force in April 2020 to allow for the complete and timely development of protective measures and relevant information for the 2020 field season. Sabina developed a COVID Operational Framework document which established many of the measures needed to reduce the risk of COVID affecting our operations. The current version of the Operational Framework has been included in Appendix A.

Sabina then worked to determine and finalize our entry process into Nunavut, as well as travel through the NWT, with both Chief Medical Officers of Health. In order to gain access to Nunavut, all personnel must follow the Sabina pre-screening processes (temperature checks, questionnaires, and medical check in Yellowknife before boarding the charter to site) and they must complete one of two Nunavut forms. Sabina then issues these to Nunavut's Chief Medical Officer of Health to get a travel exemption into Nunavut. Each individual must go through this process and each individual must receive an exemption letter from the Chief Medical Officer of Health. Thus far, all personnel proposed have successfully completed this process.

Sabina has recently established Real Time PCR Testing for COVID in Edmonton prior to Southern personnel departing for site. This program was launched during the August 31st/September 1st rotation and will remain in place moving forward. These Real Time PCR Tests are Health Canada approved and testing is completed by Datametrex and Alberta Paramedic who have recent experience with other resource companies in Nunavut.

Goose Property Status Update

As noted previously, Sabina's Goose Camp re-opened in June 2020. Upon re-opening the camp infrastructure and equipment were inspected as well as all fuel storage and fuel storage areas. All areas inspected were of sound status, and no signs of wildlife or other damage were noted. Pursuant to Sabina's Type A Water Licence (2AM-BRP1831), water samples were taken from fuel storage areas where ponding melt and rainwater existed. The results of that water sampling were compared to regulatory requirements and discharge criteria were met; discharge notification was subsequently received from the Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) Water Resources Inspector upon review of the results, and the water discharged. Since startup, Sabina has monitored various environmental aspects of the operation and has experienced no reportable incidents or spills.

As anticipated, Sabina did have groups of caribou move through the Back River Project in late July and early August. Based on collar data provided by the Government of Northwest Territories these were from the Beverly/Ahiak herd and not the Bathurst herd. Over this time Sabina implemented the agreed upon mitigations including halting heavy equipment, blasting, fixed wing & helicopters flights. The groups of caribou were still on the move during this period and thus

only interacting with site for a few hours. Mitigations were observed to be effective with the herd continuing their migration. Additional details will be provided in the annual reporting.

Sabina anticipates the Back River Project, and primarily the Goose Property, will operate through to December 2020. It is anticipated that the population at Goose Camp will remain below approximately 100 people at a time for the remainder of 2020.

Exploration activities planned to occur at the Goose Property throughout the remainder of 2020 may include:

- Diamond drilling, focused on defining and expanding the high grade corridor of mineralization within the Umwelt underground, initially at the Vault Zone and in the up-plunge direction towards the bottom of the proposed pit. Further evaluation of new discoveries at Umwelt, Llama and Nuvuyak as well as already defined resources at Goose main and Echo will also occur.
- Commence works for the future establishment of an exploration decline which will allow us to fully evaluate and further explore the high-grade Umwelt deposit.
- Airborne geophysics.
- Mechanical stripping (i.e., trenching) to expose the potential for geologic elements relating to gold mineralization and exploration potential hosted in the Goose Property area bedrock.
- Outcrop mapping activities at a regional scale to better identify and utilize surface geology.

Initial Construction activities which are planned to occur at the Goose Property throughout the remainder of 2020 may include:

- Extending the all-weather airstrip to allow aircraft of different sizes to land year-round with an increased degree of success.
- Site road network expansion including watercourse crossings towards the Process Plant Pad.
- Additions to site infrastructure including laydown areas.
- Geotechnical drilling.
- Quarrying and crushing operations.

Based on 2020 activities all required security under Pact C, Items 1 & 2, of the Back River Project Type A Water Licence (2AM-BRP1831) has been furnished to KIA and CIRNAC. Based on current plans Sabina anticipates an additional payment for the underground advancement of Umwelt in early 2021.

Environmental monitoring and baseline programs occurring at the Back River Project consist of Atmospheric, Archaeology, Water Quality, Fisheries, Wildlife, Geochemical/ Geotechnical, and Vegetation programs in 2020.

The Goose Property meteorological station underwent full calibration and maintenance in September 2020. All meteorological sensors such as the wind sensor, solar radiation sensor, barometer, snow depth sensor, etc., were factory calibrated prior to installation and swapped out in the field. The meteorological stations datalogger was upgraded to a newer model, and its Operating System was updated. Any data analysis of the meteorological data will be provided in annual reporting.

Fisheries programs were completed to address requirements related to the eventual construction of the Rascal Stream Diversion, which will connect Rascal Stream East to Gosling Pond with flows continuing through Rascal Stream West and entering Goose Lake. The Rascal Stream Diversion will provide Arctic Grayling with continued access to spawning habitat with the eventual extension of the Airstrip. In September 2020, construction of downstream velocity mitigation features (i.e., 15 instream rock weirs) was completed downstream of the Rascal Stream Diversion in Rascal Stream West. Habitat data (stream depths, widths, velocities, discharge, etc.) was collected at each rock weir location to characterize stream conditions before and after installation.

All additional applicable data will be provided via annual reporting.

Goose Property Photos

Figure 1. Quarry Operations at the approved Goose Quarry just West of the Airstrip (July 2020).

Figure 2. Phase 1 of the Airstrip Extension Activities to a strip length of 4150' (August 2020).

Figure 3. Exploration Drilling Crews waiting for Crew Change via Helicopter (August 2020).

Figure 4. Expanding the Goose Camp Kitchen to Facilitate Social Distancing (July 2020).

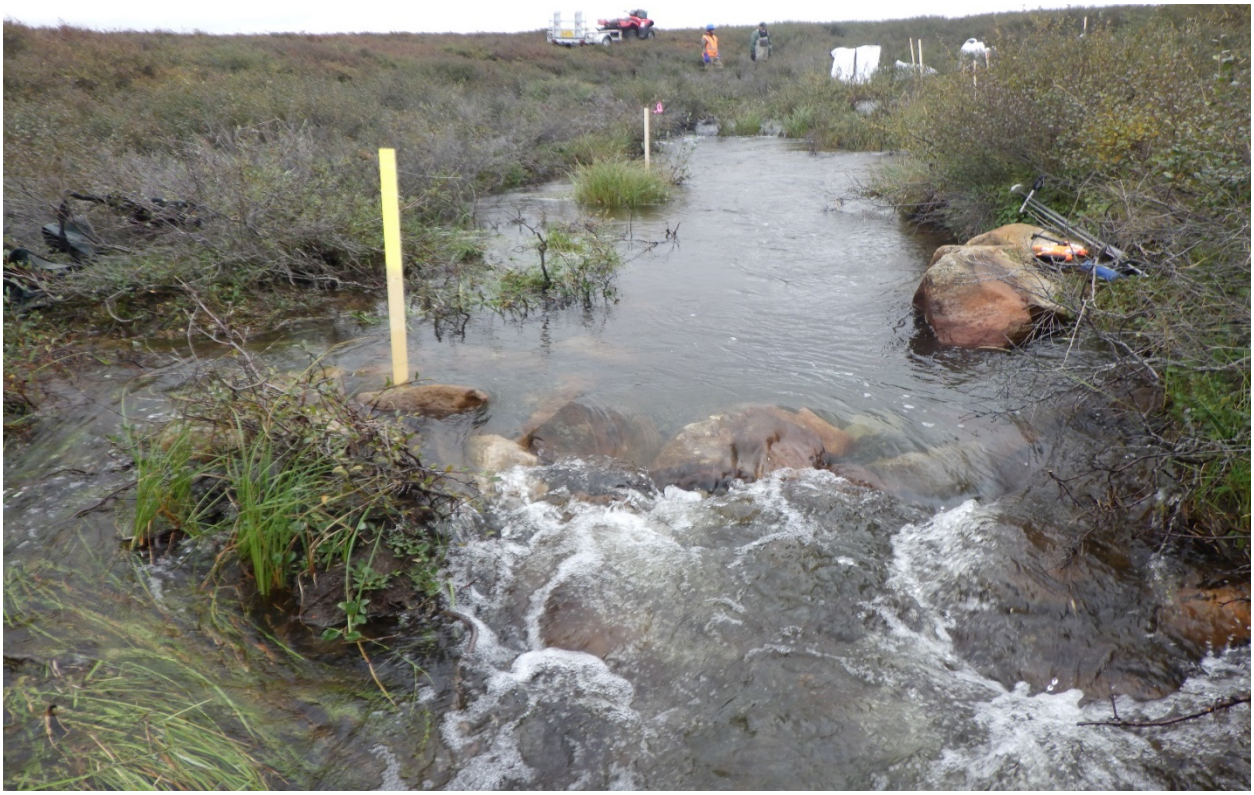

Figure 5. Constructing Instream Velocity Mitigation (Rock Weirs) in Rascal Stream West (September 2020).

Figure 6. Goose Meteorological Station Maintenance and Calibration (September 2020).

Marine Laydown Area (MLA) Status Update

The MLA was inspected on July 19, 2020 and occupied for environmental work from August 22 to August 31, and no signs of wildlife or other damage were noted, equipment was started, and all fuel storage and fuel storage areas were inspected. Pursuant to Sabina's Type A Water Licence (2AM-BRP1831) water samples were taken from fuel storage areas where ponding melt and rainwater existed. The results of that water sampling were compared to regulatory requirements and discharge criteria were met; discharge notification was subsequently received from the CIRNAC Water Resources Inspector upon review of the results, and the water discharged. The 10M liter fuel tank which is initially constructed at the MLA Bulk Fuel Storage Area, and its associated pad, wintered well and showed no signs of erosion or thermal degradation.

There are currently no plans to receive supplies via shipping at the MLA in 2020. Activities planned are primarily environmental monitoring programs and baseline data collection. Environmental monitoring and baseline programs occurring at the Back River Project consist of Atmospheric, Archaeology, Water Quality, Fisheries, Wildlife, Geochemical/ Geotechnical, and Vegetation programs in 2020.

Sabina conducted environmental surveys along the Winter Ice Road (WIR) alignment focusing on sources of aggregate for the proposed WIR sub-base upgrades, as well as the service/emergency camps; surveys included:

- Detailed mapping of borrow sites.
- Wildlife habitat, including caribou movement paths and grizzly bear denning potential.
- Cultural Heritage (archaeology) potential.
- Vegetation and ecosystem characterization and surveys for rare plants, invasive species, as well as general heath tundra.
- Surface hydrology.
- Geochemical properties sampling.

The results of mapping and field surveys of sources of borrow material will be summarized in a report and provided prior to construction of the WIR sub-base upgrades and/or the service/emergency camps.

Sabina also serviced the Bathurst Inlet meteorological station tower and its sensors for ultimate re-use at the Goose Property meteorological station, successfully executed archaeological mitigation at the MLA, and opportunistically revisited WIR vegetation monitoring plots established to photograph and document any observable changes.

All additional applicable data will be provided via annual reporting.

MLA Photos

Figure 7. Aerial Image of Sabina's Marine Laydown Area (MLA) (August 2020).

Figure 8. MLA Camp and Bathurst Inlet on a Sunny, Calm Day (August 2020).

Figure 9. MLA Accommodations (August 2020).

Figure 10. Aerial Image of Sabina's MLA Freight Storage Area (August 2020).

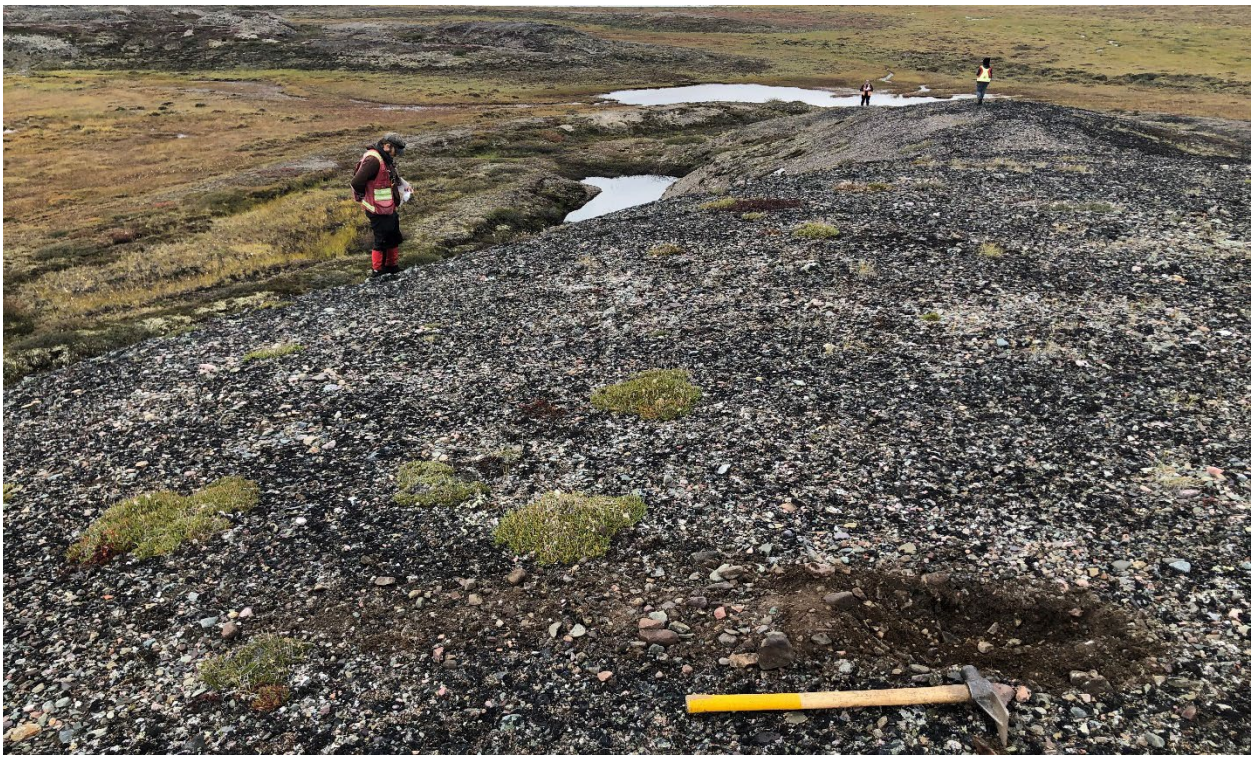

Figure 11. Survey of Potential Quarry Location for Proposed WIR Sub-base Upgrades (August 2020).

Figure 12. Survey of Potential WIR Service/Emergency Camp Location (August 2020).

George Lake Project Status Update

George exploration camp was inspected on July 19, 2020. The camp is in good condition, much the same as it was last year during Sabina's check-in. Dips were taken of the bulk fuel tanks, the generators were started, equipment was started, and camp infrastructure was fully inspected. No signs of wildlife or other impacts to camp infrastructure were noted. The bulk fuel tank engineered berm was inspected and standing melt and rainwater in the engineered berms were minimal and near fully evaporated.

No exploration and/or initial construction activities are planned at the George Project in 2020. Sabina did complete an August airborne geophysics survey in the George Project area, however operations were fully based and supported out of the Goose Camp.

Figures 13 & 14. Airborne geophysics at George Lake Property and Aerial Image of George Camp (July 2020).

Appendix A

Back River Project

COVID-19 Operational Framework Document

Sabina Gold & Silver Corp.

COVID-19 Operational Framework – Back River Project

Version 4

Sabina has evaluated the risk of recommencing activities at the Back River Project (Goose Property and Marine Laydown Area) in the context of the current COVID-19 pandemic. Sabina is confident that with proper risk mitigation and elevated health and safety practices that operations at Back River can be safely carried out for the remainder of the 2020 field season. This Framework details the requirements, practices, and new restrictions to be put in place for operation of the Project. As new information becomes available this document, and any associated guidelines, will be evaluated by management and may be updated as required.

Those measures flagged with an Asterix (*) may be relaxed or removed once all personnel have been on site for 14 consecutive days and no personnel are experiencing symptoms. The Operations Manager, or designate, will oversee the decision to relax or remove requirements.

General

- All personnel are required to meet or exceed federal, territorial and provincial public health requirements in their home location including the requirements to limit exposure through the use of 'bubbles', limiting travel and exposure points. For additional information please see:
  - https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/symptoms/provincial-territorial-resources-covid-19.html, and
  - https://www.canada.ca/en/public-health/services/diseases/coronavirus-disease-covid-19.html
- Personnel traveling from the south are required to have COVID-19 PCR tests completed prior to flying north to Yellowknife. Only those individuals with confirmed negative results will be permitted to access site. Those who meet the requirements of the NWT bubble are not required to be tested prior to entry.
- Sites are required to utilize an inbound flight schedule limiting personnel flights into camp to a few days (2-3 consecutive days long) every 3 weeks.
- Sites are required to utilize a personnel rotation schedule of approximately 3 weeks in X 3 weeks out, wherever possible. This will minimize the number rotations required in the 2020 field season and reduce potential for exposure. On occasion some personnel rotations may extend longer than 3 weeks to allow for overlap of key positions (e.g. 4 weeks in X 2 weeks out) or shortened to less than 3 weeks (e.g. 2 weeks in X 4 weeks out). Various rotations are acceptable if they align with the inbound flight schedule.
- Individuals or groups of personnel (termed guest) who are required to access site for a short period may access site outside of the inbound flight schedule if they can remain isolated from the general population during their time onsite. Should access be required the Operations Manager, or designate, will oversee this access.

- Personnel are permitted to leave site during their rotation. However, they may not be able to re-enter the site until the start of the next available rotation. Should re-entry be required the Operations Manager, or designate, will oversee this process.
- Sabina recognizes the COVID-19 pandemic has created new stresses and concerns for some individuals and the company takes the mental health and well-being of all its employees seriously. Sabina's Employee and Family Assistance Program (EFAP) remains available for employees.
- * All personnel are required to meet or exceed best-practices regarding social distancing and avoid cross contamination including maintaining a 2 meter (6 foot) spacing between individuals wherever possible and limiting common touch points. Should appropriate social distancing not be possible masks and other PPE will be required.
- * No maximum group gathering size will be established if social distancing and requirements to limit touch points can be followed.
- * Operational meetings, toolbox meetings, etc., may be staged in two or more parts to accommodate personnel numbers and proper physical distancing.
- * All personnel are required to practice enhanced hygiene practices including washing or sanitizing hands prior to entering shared facilities (office, kitchen, washrooms, etc.) and personnel must use/dispose of masks, gloves and other specialized protective equipment as directed.
- All personnel will be provided with appropriate protective equipment, hand washing stations/hand sanitizer, and guidance on reducing COVID-19 risks.
- Sites are required to develop guidelines to ensure enhanced cleaning is in place in all work and common areas.

Travel

- All reasonable efforts are to be made to limit exposure during travel from a person's home to the sites.
- All personnel are required to use masks and follow enhanced hygiene practices, including hand washing and sanitizing, for all travel segments. Once individuals are in their assigned hotel rooms masks may be removed.
- Should last minute changes to personnel be required efforts will be made to accommodate, however, changes made less than 10 days prior to departure may not be possible due to Government of Nunavut entry requirements.
- All personnel are required to isolate while in Yellowknife. This includes between flights as well as any overnight required.
- In line with government preferences no personnel will be hired from Nunavut or Northwest Territories except for those residing in Yellowknife and communities in NWT which are road accessible to Yellowknife. Sabina will frequently monitor government direction and modify this requirement as appropriate.
- All personnel are required to travel on flight combinations assigned. No modifications for personal preference will be made (i.e. preferred airlines, flight times, personal reasons, etc.).
- All travel is required to be completed using as few flight combinations as possible.
- Wherever possible personnel are to be booked on the same commercial flights and at the same hotels.

- Wherever possible hotels in Yellowknife should be avoided.
- Hotel rooms are not to be shared.
- All personnel are required to report directly to their assigned hotel and remain in their rooms except as necessary to obtain 'take out' food or other essentials.

Sites may work with contractors to meet the travel requirements or may choose to complete all requirements internally.

Monitoring & Reporting

- All personnel are required to self-monitor for COVID-19 related symptoms and perform temperature checks each day for 14 days prior to departure from their home. Records are to be maintained and provided when requested. The Sabina COVID Task Force may permit shorter monitoring periods when last minute changes to personnel are required.
- All personnel are required to complete and submit Sabina's health questionnaire 1 day prior to departure from their home.
- All personnel are required to complete the appropriate Government of Nunavut form 5 days prior to arrival in Nunavut. This form is to be provided to Sabina for submission to the Government of Nunavut to grant exemption from the current travel ban into Nunavut.
- All personnel are required to participate in additional tests and provide additional information on their final day of travel (to be completed in Edmonton or Yellowknife prior to boarding the charter flight to site).

Testing

- Personnel traveling from the south are required to have COVID-19 PCR tests completed prior to flying north to Yellowknife. 48-72 hours before the test, and following the test, personnel are requested to isolate as much as possible except as required for travel.
- Those who meet the requirements of the NWT bubble are not required to be tested prior to entry.
- Personnel who travel to site during the set site rotation will receive testing through Sabina's private testing firm (Datametrex) in Edmonton the day before they travel to site.
- Personnel who have an exemption to travel to site off the set rotation must be tested through the relevant Public Health system or through Sabina's private testing firm (Datametrex).
- Only those individuals with confirmed negative results will be permitted to access site.
- Those with positive results are required to isolate in their location until cleared by the relevant Public Health system – generally this could be 10-14 days if a confirmed positive result occurs.
- Those with inconclusive results are required to isolate in their location and await further instructions.
- Following a positive or inconclusive test result it is the contractor's responsibility to oversee subsequent testing, isolation requirements, and other measures as directed by Sabina or the relevant Public Health system.
- Those with a positive test must retest negative twice (either through the private testing firm, or the relevant Public Health system) before being granted future access to site.

Camp Accommodations

- At the sites all personnel are required to have their own separate accommodation (private rooms or physically split cabins).
- At the sites approximately 10% of available rooms are to be kept free for potential isolation needs or other uses (unanticipated guests, maintenance, etc.).
- Based on the current design of the Goose Property and Marine Laydown Area camps capacity will be capped at approximately 90 and 35 personnel respectfully.
- * No personnel are permitted in anyone else's room. Should access be required the Operations Manager, or designate, will oversee this access.

Camp Auxiliary Services

- * Site washrooms, dry's, and washing facilities are to be assigned to onsite personnel. Individuals are to use only the facilities they are assigned to. The Operations Manager, or designate, will oversee the assignments.
- * The sites social locations including TV tents, indoor smoking areas, saunas, etc. will remain closed if social distancing cannot be maintained. Kitchen and office space may not be used to socialize. The Operations Manager, or designate, will oversee which facilities may be used for social events.
- * Group recreational activities may be permitted if social distancing requirements can be followed. The Operations Manager, or designate, will approve any group recreational activities.
- * Sites are required to limit the use of office space and boardrooms to meet or exceed best-practices regarding social distancing.
- * Most common area phones are required to be removed. Should personnel require access to a phone the Operations Manager, or designate, will oversee the access.
- Where possible internet speeds are to be increased at sites to allow for individuals to communicate frequently within and outside the camp. It is recommended that personnel use their own devices for this purpose. Devices should not be shared.
- It is recommended that ample radios and charging station be made available to limit the need to share these devices.

Camp Food Service

- * Sites are required to develop guidelines on food preparation and service to meet or exceed best-practices regarding social distancing and cross contamination via touch points.
- * Sites are required to stagger food service times to adhere to best-practices regarding social distancing and avoidance of cross contamination via touch points.
- * Sites are required to modify food service areas to adhere to best-practices regarding social distancing and avoidance of cross contamination via touch points. Self-serve areas are to be removed.

Supplies

- * Sites will ensure that necessary PPE, cleaning products and other specialized equipment are available onsite, or can be made available on short notice, to meet day-to-day requirements as well as emergency medical conditions.
- * Where possible perishable food shall be transported into the sites separately or wrapped to protect from cross contamination.
- * Where possible the sites are to isolate material shipped into site in an appropriate storage location for 72 hours prior to use. Perishables food and supplies required to keep site operating may be used immediately but guidelines must be in place to limit potential cross contamination.

Worksites

- * Sites are required to develop guidelines for all worksites to limit exposure including meeting or exceeding best-practices regarding social distancing and avoidance of cross contamination wherever possible.

Helicopters

- *Sites are required to develop guidelines for the use of helicopters to limit potential exposure.

Fixed Wing

- * Sites are required to develop guidelines for the loading and unloading of planes to limit exposure.
- * Pilots who do not need to remain at the sites are not to leave the airstrip area. If a pilot must access areas outside of the airstrip the Operations Manager, or designate, will oversee their movement.

Guests & Short Term Visitors (Personnel which arrive at the sites outside of the inbound flight schedule)

- Guests may be allowed at site with approval of the Operations Manager under special circumstances.
- Guests are not permitted to use any of the common areas and must remain isolated from the general population.
- The sites are required to develop guidelines for all guests to meet or exceed best-practices regarding social distancing and avoidance of cross contamination.

Symptom Monitoring, Testing & Suspected Case Management

- Sites are required to monitor all personnel during their time onsite.
- Sites are required to consider options for onsite testing when suspect cases are identified, or where community transmission is suspected.
- Sites are required to develop guidelines for addressing suspected cases including medical treatment, isolation, labour disruption and transportation off site.

Discipline

- It is expected that all personnel make honest representations about their health in all personal monitoring, health questionnaires and company records. The safety of fellow workers depends on it.
- Those violating the requirements of this framework may be removed from site on the next available flight and may face additional disciplinary measures. The Operations Manager, or designate, will oversee discipline.

Appendix G QA/QC Plan

BACK RIVER PROJECT
Quality Assurance / Quality Control Plan

March 2021

BACK RIVER PROJECT
QUALITY ASSURANCE / QUALITY CONTROL PLAN

Table of Contents

List of Appendices

Revision Log

Date	Section	Revision
October 2017	All	Supporting Document for Type A Water Licence Application, submitted to Nunavut Water Board for review and approval
March 2021	Throughout, but mainly: Executive Summary; Sections 1, 6.1, 6.3.4, Appendix A	General improvement, updates to reflect relevant conditions of Water Licence 2AM-BRP1831, and incorporation of suggestions from ALS Laboratory. Addition of Laboratory acceptance of Plan and confirmation of CALA accreditation. Addition of translated executive summaries. Additional explanation on the types and uses of duplicates and blanks.

Acronyms

ALS	ALS Environmental
CIRNAC	Crown Indigenous Relations and Northern Affairs Canada (formerly INAC)
ECCC	Environment and Climate Change Canada
INAC	Indigenous and Northern Affairs Canada
MAD	Main Application Document
MLA	Marine Laydown Area
MMER	Metal Mining Effluent Regulations
NWB	Nunavut Water Board
Plan	Back River Project Quality Assurance / Quality Control Plan
Project	Back River Project
QA/QC	Quality Assurance / Quality Control
Sabina	Sabina Gold & Silver Corp.
SOP	Standard Operating Procedures
SIG	Supplemental Information Guide

QA/QC Executive Summary

This Quality Assurance/Quality Control Plan (QA/QC Plan or Plan) sets out standard procedures for collection of surface water and groundwater samples and data in support of monitoring programs outlined in the Back River Projects Water Management Plan, Environmental Management and Protection Plan, Aquatic Effects Management Plan and Marine Monitoring Plan. This Plan was developed to ensure that the procedures for sample collection were standardized and conformed with relevant standards established to ensure data collected are representative, are of known quality, are properly documented, and are scientifically defensible.

Nakuuni Atuqpiariangi Nakuuni Munariyauni (QA/QC) Ataniqnut Nainaqhimayuq

Una Nakuuni Atuqpiariangi Nakuuni Munariyauni (QA/QC Parnaut uvaluniit Parnaut) ihuaqhaqtai atuqtauvaktut pityuhit katitiqninut maniqap qangani imait maniqamilu imait naunaiyaqni tuhagakhatlu ikayuqtuqninut munariyauni havagutit titiqhimayut yalvani Hanningayuq Kuugaq Havaguhi Imaq Aulatauni Parnaut, Avatiliqutit Aulatauni Hapumminilu Parnaut, Imaqmiutat Aktuanit Aulatauni Parnaut tamnalu Tariuqni Munariyauni Parnaut. Una Parnaut pivaliatihimayuq atuqpiarianga tapkuat pityuhit naunaiyautit katitauni atuqtauvaknit malikhaqnilu tapkununga turangayut atuqtauvaknit pinguqtauyut atuqpiariangi tuhagakhat katitauni kivgaqtutauyakhai, ilihimayauni nakuuni, naamaktumik titiqhimayangi, naunaiyautinutlu naunaipkutaqariangit.

QA/QC ᐃᓱᒪᑕᐅᓂᖅᓂᑦ ᓇᐃᓐᓇᖅᓱᒪᔪᖅ

ᖃᐅᔨᐃᓐᓂᕆᐅ ᓇᓗᓇᖕᖏᓂᖅ/ᖃᐅᔨᐃᓐᓂᕆᐅ ᐊᐅᓪᓚᕐᓂᖓᑦ <ᖁᓇᐅᑎᒥᑦ (QA/QC <ᖁᓇᐅᑎ) ᑎᑎᕋᖅᓱᒪᔪᑦ ᐊᑐᖅᑕᐅᖃᖅᑕᖅᑐᑦ ᑲᑎᖅᓱᐃᓂᐊᖏᓪᓗᑎᓂ ᐃᒪᐅᑦ ᖃᐅᓕᖕᒥᓂᑦ ᐊᒪᓚᓗ ᓄᓇᒋᑦᑐᑦ ᐃᒪᖁᓂᓂᑲᓂᖅ ᐊᒪᓚᓗ ᓇᔭᐅᑎᓂᖅ/ᑎᑎᕋᖅᑲᓂᖅ ᐃᑲᔪᐃᔪᓂᖅ ᖃᐅᐅᔨᓴᐃᓂᕐᒪᑦ ᑎᑎᕋᖅᓱᒪᔪᑦ ᓴᓐᓂᖏᓪᓗᒥᑦ ᐃᒪᕐᒥᖅ ᐊᐅᓚᕆᑎᓂᕐᒪᑦ <ᖁᓇᐅᑎᒥᑦ, ᐊᕿᑎᓚᓴᓂᕐᒪᑦ ᐊᐅᓚᕆᑎᓂᕐᒥᖅ ᐊᒪᓚᓗ ᒥᐊᓂᕋᓱᓂᕐᒪᑦ <ᖁᓇᐅᑎᒥᑦ, ᐃᒪᕐᒥᐅᑕᓂᖅ ᖃᐅᔨᐃᖏᓕᕋᑎᑎᓂᓄᓂ ᐊᐅᓚᕆᑎᓂᕐᒪᑦ <ᖁᓇᐅᑎᒥᑦ ᐊᒪᓚᓗ ᑕᓕᐊᖏᐅᑕᓂᖅ ᖃᐅᐅᔨᐃᓐᓂᕐᒪᑦ <ᖁᓇᐅᑎᒥᑦ. <ᖁᓇᐅᑎ ᐱᖓᔪᖃᑎᒌᑕᐅᓄᖅᑐᑦ ᐊᑐᖅᑕᐅᔾᔨᓕᓵᓂ ᐅᑐᖅᑐᐃᑎᑎᓂᖅ ᑲᑎᖅᓱᐃᓂᐊᖏᓪᓗᒥᑦ ᐊᑐᐅᓱᐅᖏᓕᕋᑎᑎᓂᖅᑐᑦ ᐊᒪᓚᓗ ᒪᑕᓪᓗᑎᒃ ᑕᒪᐃᔨᓄᖅᑐᑦ ᐊᑐᖅᑕᐅᖃᖅᑕᖅᑐᑦᓄᓂ ᐃᒪᖁᓂᓂᑲᓂᖅ/ᑎᑎᕋᖅᑲᓂ ᑲᑎᖅᓱᒪᔪᑦ ᑕᒪᐃᔨᓄᖅᑐᑦ, ᐊᒪᓚᓗ ᓱᓇᑐᐃᓐᓇᑕᓕᓂᓄᓂ ᖃᐅᔨᓴᓪᓇᐅᑕᐅᓪᓗᑎᒃ.

1. Introduction

The Back River Project (Project) is a gold project owned by Sabina Gold & Silver Corp. (Sabina) within the West Kitikmeot region of southwestern Nunavut. It is situated approximately 400 kilometres (km) southwest of Cambridge Bay, 95 km southeast of the southern end of Bathurst Inlet, and 520 km northeast of Yellowknife, Northwest Territories. The Project is located predominantly within the Queen Maud Gulf Watershed (Nunavut Water Regulations, Schedule 4).

The Project is comprised of two main areas, Goose Property and the Marine Laydown Area (MLA) with interconnecting winter ice roads. The majority of annual resupply will be completed using the MLA situated along the western shore of southern Bathurst Inlet, which is connected seasonally to Goose via an approximately 160 km long winter ice road (WIR). Both the Goose Property and the MLA make use of a local networks of all weather roads and pads.

This Quality Assurance/Quality Control Plan (QA/QC Plan or Plan) sets out standard procedures for collection of surface water and groundwater samples and data in support of Project monitoring programs including those outlined in Sabina's Water Management Plan, Environmental Management and Protection Plan, and the Aquatic Effects Management Plan.

This Plan has been constructed in consideration of all applicable guidelines and requirements, including those of Water Licence 2AM-BRP1831. This Plan will be reviewed and updated as needed to reflect changes in best practices related to sample collection and on advice of the analytical laboratory.

Any updates to this Plan will be sent to an Accredited Laboratory for review and acceptance as required by 2AM-BRP1831 Part I, Item 13, and subsequently submitted to the Nunavut Water Board (NWB).

2. Scope and Objectives

The QA/QC Plan is one of the documents that forms part of Sabina's overall General and Aquatic Effects Monitoring Program for the Project. This plan has been written to meet requirements of the Type A Water Licence 2AM-BRP1831 and applies to all Sabina projects in the Kitikmeot region.

This plan is divided into the following components:

- Applicable Legislation and Guidelines (Section 3)
- Planning and Implementation (Section 4)
- Roles and Responsibilities (Section 5)
- Field Sample Collection (Section 6);
- Laboratory Analysis (Section 7)
- Data and Reporting Requirements (Section 8)

The objectives of the Plan are to confirm that the chemical data collected are representative, are of known quality, are properly documented, and are scientifically defensible. Data of high quality can be achieved through the collection and analysis of samples using specified standardized procedures, the use of accredited laboratories (Appendix A), and use of staff with appropriate training.

2.1 RELATED DOCUMENTS

Documents which support this plan include the following:

- Environmental Management and Protection Plan
- Aquatic Effects Management Plan
- Water Management Plan
- Marine Monitoring Plan
- Mine Waste Rock Management Plan

3. Applicable Legislation and Guidelines

Specific legislation, regulations, and guidelines with provisions for Quality Assurance and Quality Control include:

- *Nunavut Waters and Nunavut Surface Rights Tribunal Act* (Government of Canada 2002a);
- Nunavut Water Regulations (2013);
- *Fisheries Act* (Government of Canada 1985)*; and*
- the *Metal Mining Effluent Regulations* (Government of Canada 2002b).

Sabina will also be bound by the terms and conditions of Type A Water Licence 2AM-BRP1831 to be issued by the NWB and the Project Certificate issued by the Nunavut Impact Review Board (NIRB).

In addition, the QA/QC Plan has been developed in accordance with Crown Indigenous Relations and Northern Affairs Canada (CIRNAC) '*Guidelines for Use by Class "A" Licensees in Meeting SNP [Surveillance Network Program] Requirements and for Submission of a QA/QC Plan*' (INAC 1996). For purposes of this plan, definitions for QA and QC are as follows:

- Quality Assurance: the system of activities designed to better ensure that quality control is done effectively; and
- Quality Control: the use of established procedures to achieve standards of measurement for the three principal components of quality – precision, accuracy, and reliability.

4. Planning and Implementation

Monitoring will be the principal mechanism to provide feedback to continually gauge the effectiveness of environmental performance. Operational control is facilitated through the contractor job-specific standard operating procedures (SOPs) work instructions, on-the-job instruction, tailgate meetings where required, contract requirements, and service agreements. The effectiveness of physical operational control will be reviewed according to preventative maintenance and review procedures and schedules.

Implementation of QA/QC measures will be executed throughout all phases of the Project from Construction to Post-Closure.

5. Roles and Responsibilities

The General Manager is ultimately responsible for the success of this plan and approves all relevant policies and documents, auditing, action planning and the verification process.

The Environmental Manager along with his/her direct reports are responsible for the implementation of this plan including overall management of the Plan and internal reporting, as well as for auditing Project performance to ensure compliance and adaptive management.

All other Project personnel involved with QA/QC, and monitoring activities will be responsible for the effective implementation of this plan including completion of required training, and maintaining compliance with training requirements or by Sabina's SOPs and best management practices. All employees are to work in compliance with Health and Safety Laws and Regulations.

6. Field Sample Collection

For purposes of this plan, aquatic monitoring consists of three forms as follows:

- **Regulated discharge monitoring** occurs at monitoring stations specified in licenses or regulations. It includes discharge limits that must be achieved to maintain compliance with an authorization (i.e., water licence) or regulation (i.e., Metal Mining Effluent Regulations [MMER]). Enforcement action may be taken if discharge limits are exceeded for a parameter.
- **Verification monitoring** occurs at select stations across the Mine for operational and management purposes by Sabina. This type of monitoring provides data for decision making and builds confidence in the success of processes being used. There is no obligation to report verification monitoring results, although these results can be mentioned in environmental management plans (i.e., sampling to verify soil remediation in the landfarm) or annual reports (e.g., Aquatic Effects Management Plan, site annual report).
- **General monitoring** occurs at stations across the Mine and outside of the Mine. In a water licence, these stations are often monitored according to a schedule and can cover all types of monitoring (i.e., geotechnical, lake levels, etc.). This monitoring is subject to compliance assessment to confirm sampling was carried out using established protocols, included QA/QC provisions, and addresses identified issues. General monitoring is subject to change as directed by an Inspector, or by the Licensee, subject to approval by the NWB.

6.1 SAMPLING LOCATIONS

Water quality monitoring will occur during all Project phases. Sampling stations, frequency, and parameters are specified in the Water Licence as well as individual management and monitoring plans.

All sampling stations will have a GPS location and be landmarked. All stations will be used repeatedly with trained personnel, using the same techniques to reduce operational error. The following sections outline the standard procedures for collection and handling of all surface water and groundwater samples.

6.2 SAMPLING EQUIPMENT

In the field, personnel will have suitable expertise to conduct sampling. All safety measures and relevant SOPs will be followed. Proper sampling gear, field instruments, and methods will be employed by personnel while in the field. Sampling information will be appropriately documented, and samples will be filtered and/or preserved (as necessary), stored in a cool environment, and shipped as soon as possible after sample collection to a qualified laboratory.

Equipment, such as the Analite NEP 160 Meter (turbidity), Oakton PCS35 Meter (pH and conductivity), and Hanna Multi-Parameter Meter (pH, dissolved oxygen and conductivity) are handheld instruments that can be used to measure field parameters as required. The instruments will be calibrated before each sample event, or as per manufacturer's schedule for optimal performance. Calibration and maintenance procedures will be followed as set out by the supplier's operation manual. Equipment and bottles will be selected so that they do not contaminate or alter the concentrations of parameters of interest according to appropriate laboratory standards.

Surface water samples will preferentially be collected as grab samples directly into the sampling bottles (e.g., from streams) or from prescribed depths in lakes using a standard sampling device (e.g., GO-FLO Sampling Bottle). For groundwater sampling, a pump with low-density polyethylene tubing will be used.

Laboratory-provided syringes and filters disks will be used to filter water for specific analyses (e.g., dissolved metals, dissolved organic carbon). Alternatly, a filter apparatus, manual pump, and filter paper may be used.

New laboratory supplied containers will be used for sample collection. The bottles will be either polyethylene plastic or glass, dependent on the specific parameter being analyzed.

6.3 SAMPLING METHODS AND HANDLING

6.3.1 Sampling Identification

All samples will have a unique sample identification name based on a station identifier, date, and time of collection.

All sample bottles will be identified with the sample identification and date of collection. This information will be marked on a label with a water-resistant pen and affixed to the sample bottle. Additional information (time of sampling and parameters to analyze) will be included in the analysis request that will be sent to the accredited laboratory (Appendix A).

6.3.2 Surface Water Sampling

All water quality samples will be collected by trained personnel using suitable sampling equipment (e.g., acid-rinsed GO-FLO sampling bottle, sampling gloves).

The bottles will be pre-labelled with the required sample identification before going to the field. Surface grab samples will be collected by submerging the sample bottle to half depth of the stream taking care not to capture surface debris (such as leaves or insects). For sumps, ponds, and piped discharge points, samples will be collected below the surface of the water. For lake sampling, samples will be collected from the prescribed depth for the particular station using an appropriate sampling device (e.g., GO-FLO sampling bottle).

Sample bottles will be provided by the accredited laboratory. They will be received pre-rinsed and either precharged with preservative or pre-rinsed with vials of preservative to be added in the field by qualified technicians or biologists. If the sample bottles are not precharged with preservative, they may be rinsed three times with sample water before filling as per direction from the lab. If the sample are precharged with preservative, the bottle will be filled by using another clean bottle to avoid any release of preservative. Sometimes, a preservative is added after filling as directed by the laboratory. The bottles will be filled appropriately to allow mixing, preservative addition, and thermal expansion. Samples analyzed for dissolved parameters will be filtered through filter paper (0.45 micrometres Millipore filter) and then preserved (if required) as soon as possible after sample collection.

Water quality samples will be analyzed by an accredited laboratory. Samples will be analyzed at detection limits suitably less than any discharge criteria, aquatic life, and/or drinking water quality guidelines, as applicable.

6.3.3 Groundwater Sampling (i.e., Westbay Well)

<u>Well Purging</u>

A fluid purge is conducted prior to collecting a sample from the specific Zone. Purges are conducted by directing water from the specific Zone into the Westbay casing through the sampler probe (MOSDAX sampler system, probe Model 2531) connected to the measuring port. The fluid in the casing is lowered such that pressure inside the casing is around 15 m H_2O lower than the natural pressure at the specific Zone.

Groundwater Sampling

Once purging of the well is complete, a groundwater sample for laboratory analysis is collected through the measuring port at the specific Zone using the MOSDAX sampling probe. A string of four 250 mL cleaned stainless steel bottles are first vacuumed out using a vacuum pump and then connected to a leading end of a motorized cable winch. The stainless steel bottles are filled iteratively by opening and closing the sampler probe valve while sustaining zone pressure.

Upon recovery of the stainless steel bottles at surface, water is directed into the laboratory bottles using the interconnect valve. Samples are preserved as instructed by the laboratory and shipped to the laboratory in coolers with ice packs.

6.3.4 Duplicates and Blanks

Duplicate and blank samples will represent approximately 10% of all collected samples. Field Duplicates help to measure sample heterogeneity versus analytical consistency. Laboratory Duplicates will also be created and analyzed by the laboratory to assess analytical variability. Travel, Equipment, and FieldBblanks will be used to detect potential sources of contamination. Travel Blanks are pre-filled samples provided by the lab which are left unaltered and returned to the lab to help identify any contamination due to transport. Field Blanks are lab-provided pre-filled samples that are taken and opened in the field location and preserved as samples would otherwise be to quantify any effect of this exposure to the ambient environment. Equipment Blanks are blanks which use lab-provided water to fill sampling bottles in the field in the same manner as routine samples would be collected (e.g. the water may be poured into a Go-Flo and then collected in the sampling bottles), including the addition of any necessary preservatives.

Duplicates and blanks will be collected and handled in the same manner as the other samples in the field.

Duplicates and blanks will be given a unique QC code so samples are submitted blind to the laboratory. In the field notes, there will be clear documentation of the QC code, the type of QC sample (i.e., duplicate, blank), and when and where it was collected.

6.3.5 Sample Transport

All water samples will be stored upright in sealed coolers with ice packs and preserved as specified by the laboratory. Samples will be shipped to the external laboratory as soon as possible and dedicated ground transportation to ensure arrival in a safe and timely manner. If the sample cannot be shipped the same day, they are to be stored in a refrigerator at 4°C until shipping.

A Chain of Custody form with the following information will be completed for every shipment of samples:

- company name and sampler's name
- sample identification name
- time and date of sampling
- requested analytical parameters for each sample

- time and date of shipping
- analytical laboratory address and contact person.

One electronic or PDF copy will be sent by email to the laboratory; an electronic copy will be kept at the Project site for reference.

7. Laboratory Analysis

7.1 EXTERNAL LABORATORY

All analytical chemistry analyses will be performed by an accredited commercial laboratory. All data from the accredited laboratories will undergo a rigorous internal QA/QC process, including the use of spiked samples and duplicate samples. Toxicity tests will be performed by accredited professionals. Testing will be conducted as stipulated by the Licence and where appropriate Environment and Climate Change Canada's (ECCC) Biological Test Methods.

7.2 INTERNAL LABORATORY

An environmental and mining site laboratory will be available on-site. The in-house laboratory will perform on-site acid rock drainage testing, as appropriate to meet the day to day requirements of waste rock management and mine operations. These results will be for observational purposes and will not meet the standards of an accredited laboratory. Quality Assurance and Quality Control sampling will be completed at an accredited facility off-site at regular intervals to verify the on-site acid rock drainage data. Additional details on waste rock management can be found in the Mine Waste Rock Management Plan.

Any long holding time parameters (e.g., metals, most anions and cations, oil and grease) will go to an outside laboratory, shipped by air, after appropriate processing and preserving.

8. Data and Reporting Requirements

8.1 DATA COLLECTION

Record keeping will be conducted by Sabina and its subcontractors. Data for all water sampling will be entered into suitable electronic databases (e.g., Microsoft Access). The data will be stored and managed either by Sabina or with the subcontractor responsible for monitoring. Data will be maintained in a format to allow for comparison between years, trend analysis, and flagging out-of-compliance samples to enhance the effectiveness of the QA/QC program.

The following data will be collected for each sample in the field and will be entered into the database by the sampler for the corresponding sampling station:

- sample identification name;
- name of sampler;
- date and time of sampling or measurement; and
- physical characteristics (pH, temperature, etc.), if required.

Upon receipt of sample results from the laboratory, the data will be entered in the database and matched to the sample identification name. The certificate of analysis for each sample from the accredited laboratory will include but will not be limited to:

- analytical methods or techniques used;
- date of analysis;
- name of the person(s)/laboratory that approved the certificate; and
- results of any analysis.

All formal documents and reports will follow version-control procedures with revision tracking and version numbers. Version control information will be required for all documents and data that are issued, and approval will be given and tracked before issue. Designated personnel will coordinate preparation, review, and distribution, as appropriate, of the data and reports required for regulatory purposes.

8.2 DATA VERIFICATION

Upon receipt of analytical results, the blank and duplicate analyses will be verified for potential contamination and accuracy, respectively. Results will be interpreted and recommended actions will be implemented, if necessary.

8.3 EXCEEDANCE REPORTING

Any measured concentration at a sample station exceeding a regulated discharge criterion will be reported to the NWB, ECCC, Kitikmeot Inuit Association, and the Indigenous and Northern Affairs Canada (INAC) water inspector; details will be provided within 30 days of the receipt of the analysis.

These regulated discharge criteria will be outlined as stipulated in the:

- Type A Water Licence (reported to NWB, ECCC, INAC); and
- MMER (reported to ECCC through the online Regulatory Information Submission System).

In addition, results of the action plan, where required, will be reported and, where necessary, mitigation options identified within 90 days after receipt of the analyses.

9. References

Government of Canada. 1985. *Fisheries Act*. R.S.C., c. F-14; current to March 28, 2016

Government of Canada. 2002a. *Nunavut Waters and Nunavut Surface Rights Tribunal Act*. S.C. 2002, c.10.

Government of Canada. 2002b. Metal Mining Effluent Regulations. SOR/2002-222; current to November 18, 2012.

INAC (Indian and Northern Development Canada). 1996. Quality Assurance (QA) and Quality Control (QC) Guidelines for Use by Class "A" Licensees in Meeting SNP Requirements and for Submission of a QA/QC Plan.

NIRB (Nunavut Impact Review Board). 2013. *Guidelines for the Preparation of an Environmental Impact Statement for Sabina Gold & Silver Corp.'s Back River Project*. NIRB File No. 12MN036).

NWB (Nunavut Water Board). 2010a. Mining and Milling Supplemental Information Guideline (SIG) for Mine Development (MM3). February 2010.

NWB. 2010b. Miscellaneous Supplemental Information Guideline (SIG) for General Water Works (including crossings, flood control, diversions, and flow alterations) (M1). February 2010.

Appendix A. Laboratory Acceptance of Plan and Confirmation of Accreditation

25 February 2021

To Whom it may Concern

RE: Sabina Gold and Silver Corp - Back River Project, QA/QC Plan

This letter is to confirm that ALS Environmental (ALS) has reviewed the Back River Project Quality Assurance/Quality Control Plan (February 2021), provided feedback and the subsequent edits, and confirms ALS's acceptance of this Plan from an analytical perspective.

It is proposed that environmental samples (water quality and others) from the Back River Project would be submitted to ALS via the ALS Yellowknife NWT location, where the submission/file will be managed, and air ship the samples to the ALS Environmental - Vancouver BC (ALS Vancouver) laboratory for analysis.

ALS Vancouver is a full service laboratory with extensive capabilities for the analysis of metals, inorganics, organics and microbiology in water, soil/sediment, waste, tissue and/or air samples. ALS Vancouver is CALA accredited for a wide rage of tests including the standard tests mining and mine development properties collect for water quality monitoring.

The CALA Scope of Accreditation for ALS Vancouver laboratory is available on the CALA website, http://www.caladirectory.ca/lab_info.php?action=search&search=mem&wId=s&lab=als&prov=BC&mId=1719 and the ALS Vancouver CALA Certificate is provided on the following page.

Please contact me if you have any questions or concerns at 604 253-4188 (office), 604 219-4228 (mobile) or via brent.makelki@alsglobal.com

Regards,

Brent A. Makelki. B.Sc

Western Canada Regional Manager

ALS Environmental

Canadian Association for Laboratory Accreditation Inc.

Certificate of Accreditation

ALS Environmental (Vancouver)
ALS Canada Ltd.
8081 Lougheed Highway
Suite 100
Burnaby, British Columbia

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

Accreditation No.:	A1719
Issued On:	December 12, 2018
Accreditation Date:	January 3, 2005
Expiry Date:	June 11, 2021

President & CEO

Appendix H Back River Project Engagement Record

Project Consultation Record 2020

Date	Individual/Organization	Type of Activity
January 9, 2020	Kitikmeot Stakeholders Working Group	KIA hosted Working Group intended to identify priorities for future training initiatives that can assist Kitikmeot Beneficiaries in acquiring skills necessary to achieve full-time employment in their area of interest. – via teleconference
January 21, 2020	Kitikmeot Inuit Association	Project Update given to KIA Lands at Sabina Corporate Office in Vancouver, BC
January 21, 2020	Kitikmeot Corporation	Luncheon held during Round Up Conference in Vancouver, BC
January 29, 2020	Mineral Education Working Group	Pan territorial group hosted by the Nunavut Chamber of Mines with a focus on training and education in Nunavut – via teleconference
February 10-12, 2020	Kitikmeot Trade Show	Sabina attended the Kitikmeot Trade Show in Cambridge Bay, NU
February 19, 2020	Hamlet of Kugluktuk	Meeting in Edmonton to discuss Hamlets Long Term Care Facility Project and Sabina Regional Wealth Creation Fund
February 26, 2020	Mineral Education Working Group	Pan territorial group hosted by the Nunavut Chamber of Mines with a focus on training and education in Nunavut – via teleconference
March 2, 2020	NTI	Attended luncheon for Nunavut Stakeholders hosted by NTI during PDAC in Toronto, Ont
March 4, 2020	Kitikmeot Inuit Association	KIA/Sabina Presidents Meeting in Toronto, Ontario
May 11 – 15, 2020	Kitikmeot Socio-Economic Monitoring Committee	Government of Nunavut annual meeting to discuss Project related Socio-Economic Monitoring - CANCELLED Due to COVID – 19
June 25, 2020	5 Kitikmeot Hamlets, Kitikmeot Inuit Association, 5 Kitikmeot Inuit Association Community Liaison Officers	Project update sent via email regarding Sabina COVID 19 Response
November 12, 2020	5 Kitikmeot Hamlets, Kitikmeot Inuit Association, 5 Kitikmeot Inuit Association Community Liaison Officers	Project update sent via email as annual community tour unable to proceed in 2020 due to COVID 19 Pandemic and Nunavut Travel Restrictions

Project Consultation Record 2020

October 23, 2020	Mineral Education Working Group	Pan territorial group hosted by the Nunavut Chamber of Mines with a focus on training and education in Nunavut – via teleconference
November 3, 2020	Kitikmeot Stakeholders Working Group	Kitikmeot Inuit Association hosted Working Group intended to identify priorities for future training initiatives that can assist Kitikmeot Beneficiaries in acquiring skills necessary to achieve full-time employment in their area of interest. – via teleconference
December 1, 2020	Mineral Education Working Group	Pan territorial group hosted by the Nunavut Chamber of Mines with a focus on training and education in Nunavut – via teleconference